Radio Control
CAR ACTION
THE WORLD'S PREMIER R/C CAR MAGAZINE
February 1989
Canada $3.75
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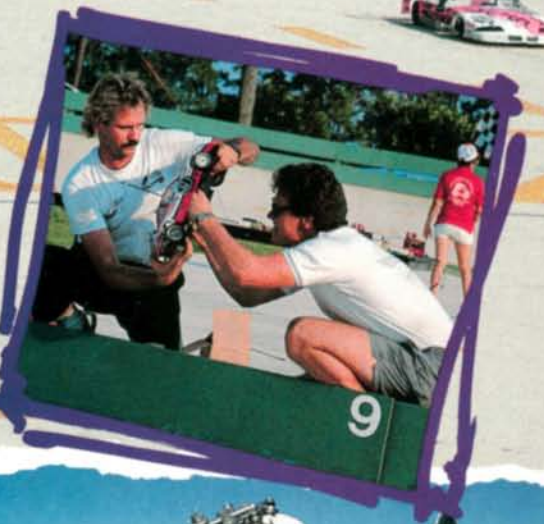
FASTEST MOTORS

NEW COLUMN: Dirt Digest

Joel Johnson on TURBO ULTIMA

Stock-Car Finishing

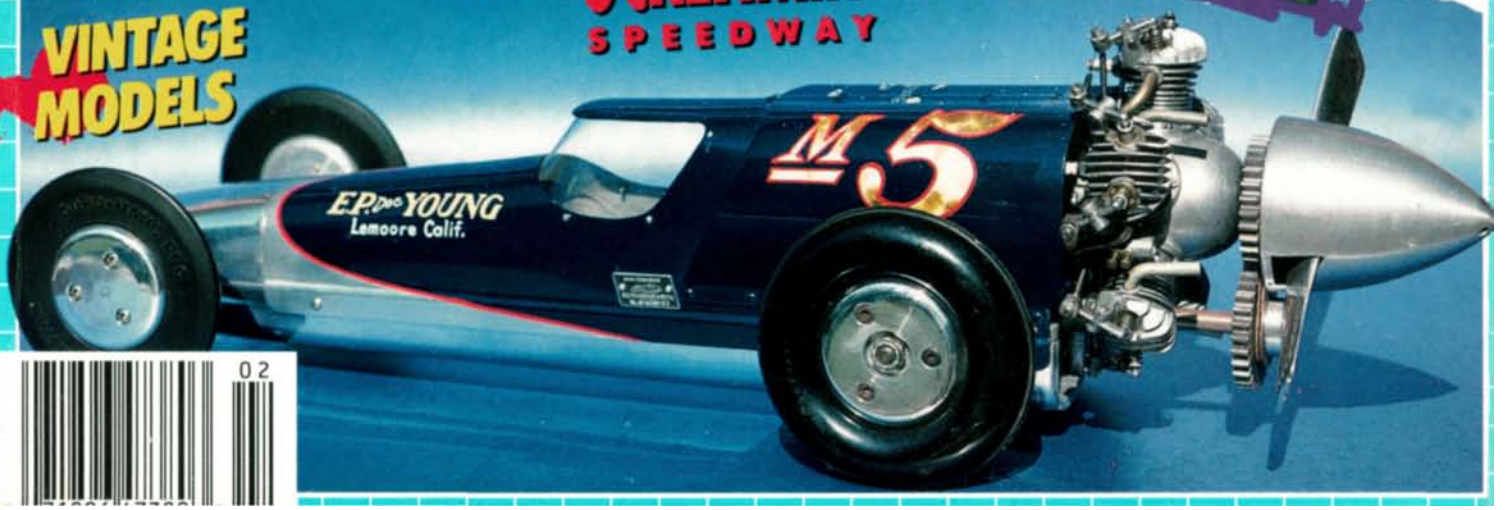
TURN & BURN STOCK CAR SPECIAL



HOTTEST Stock Cars for '89

SCREAMIN' SPEEDWAY

VINTAGE MODELS



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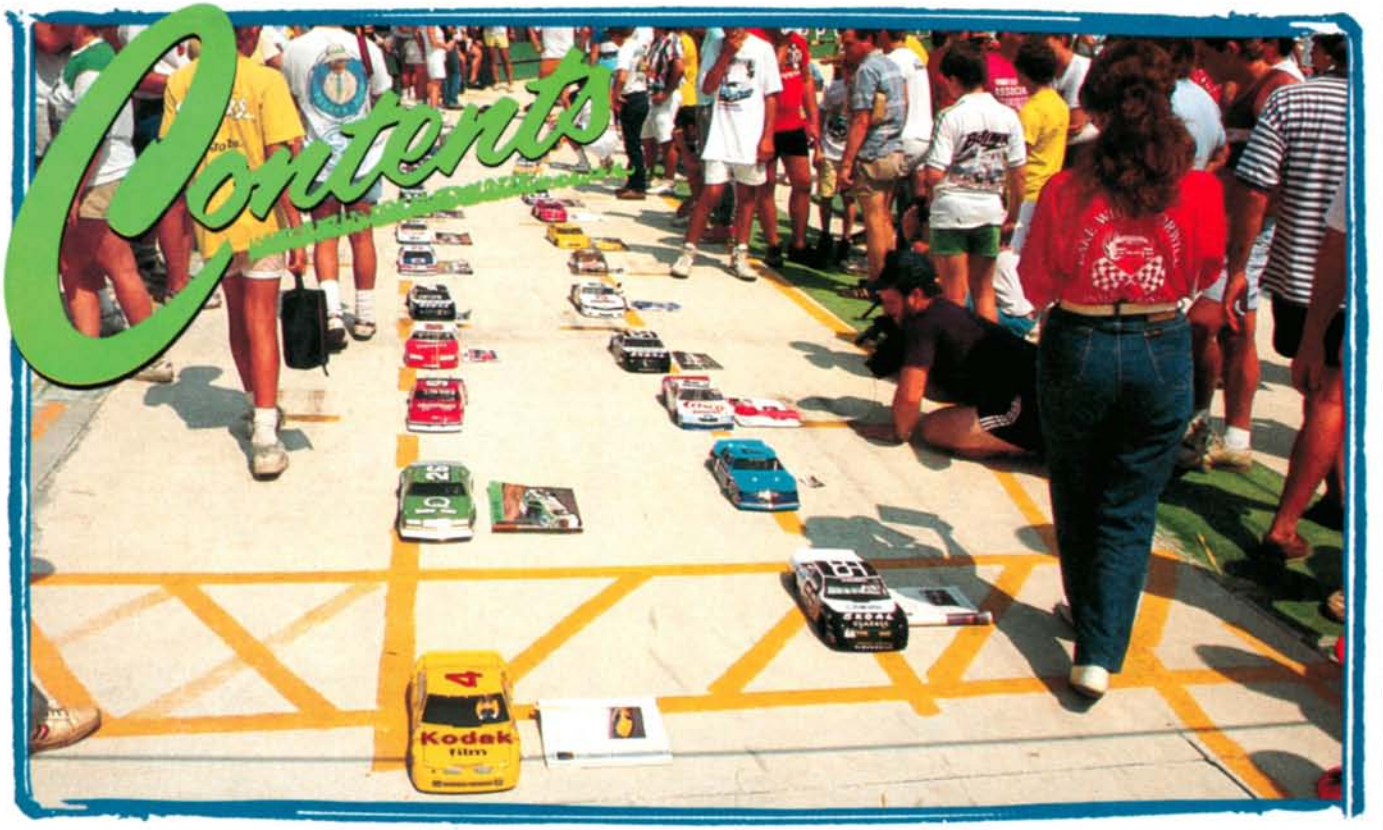

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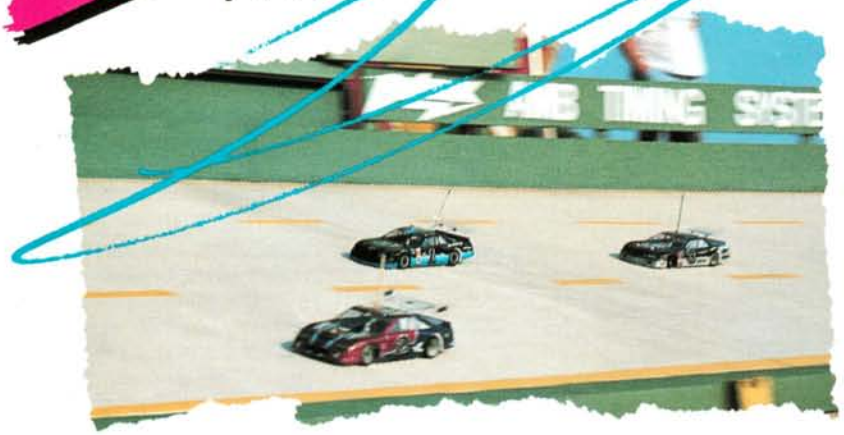
EDITORIAL

by CHRIS CHIANELLI



FIFTY-FIVE MPH! That's how fast Bud Bartos's 1/10-scale CAM-powered BoLINK '88 Olds body and Enduro chassis went at Car Action Weekend's high-bank extravaganza at Lake Whippoorwill Speedway—and many others were right on his heels.

Since the first Car Action Weekend, the 1/10-scale on-road phenomenon has brought about at least six new manufacturers of on-road cars into existence; and all these racers are American made. Maybe that will help balance the national deficit? Along with the new manufacturers, high-speed oval tracks have sprung up in Atlanta, GA, Florence, AL, Bakersfield, CA, and Rockford, IL—and more are under construction as you read this. Looks like much more than a fad to me. Personally, I'd love to see a GTP and an Indy class added to this event.

Speaking of Indy cars, the March issue (our 1/4-Scale Special) will have a report on the NORRCA-sanctioned R/C Thunderdrome. This new event is a high-bank oval race presented by McAllister Racing and Dan's RC Stuff. The highlights were the 1/10-scale Indy car race, plus a much-needed Tamiya Road Wizard Class (also legal are Tamiya F-1s)—all burning up the concrete of Southern California.

Also in this issue, Frank Gudaitis brings us "Vintage Model Racing"—a look at the model cars of yesteryear; Fred L. Beaver brings us the Pony Express (a 1/12-scale Mustang Monster mudster); and if you're in the mood to build your own track, Mike Lee has a few suggestions in "Track Design." Oh yes, let's not forget our new feature by Mr. Bill (O'Brien, that is) where he revisits previously reviewed off-roaders. The new feature is called "Dirt Digest"; read it, and maybe the competition will soon be digesting *your* dirt, and you'll be saying "Too bad, bye-bye!" ■

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Letters

WHERE TO WRITE TO US

If you're writing to the editors (and we'd love to hear from you), please be sure to address your letters to "Letters" *Radio Control Car Action*, 251 Danbury Road, Wilton, CT 06897. Only subscription orders and inquiries are handled by our Customer Service Department in Mount Morris, Illinois; other mail addressed there must be forwarded to Connecticut, which leads to long delays.

Serious Stock

I read the letters regarding the stock motor quandary, including Mr. Ernie Provetti's somewhat indignant response to an opinion presented in the December issue of your magazine.

Frankly, I'm somewhat amused by the lack of vision that the R/C car industry and event organizers have displayed. Stock-class racing *is* dead, folks. At least, the stock class that ROAR had in mind when it formed the category. While everyone is swarming to attack the "tweaked" stock motors as the harbingers of doom, these fiery-eyed reactionaries are missing other fundamental flaws that are just as much of a threat to the continued survival of the stock class.

Every week, I put my nearly box-stock car down next to the absolute latest in stainless-steel, graphite, titanium, belt-drive, trailing-arm-converted after-market technology. However, because they run a 31,000rpm "stock" motor that's been tampered with by the local "motor guru," and have a nice, fresh 6-cell matched SCR pack, these cars are completely "legal." Never mind that these cars cost more than most R/C car racers make in a month! The only difference between these cars and a full modified is a ball-bearing motor and a 7-cell pack. That's disgraceful, people.

I have some proposals that I feel address the most pressing problems in the stock class: First, some regulation absolutely must be imposed upon the amount of "hopping-up" that can be done on a car entered as "stock." Second, I see no need whatsoever for the SCR packs. Regrettably, this will be absolutely impossible to enforce. All the SCR cells have done is made racing more expensive in the stock class. Their "higher voltage output" adds speed, that's true: However, everyone has them now. Due to that fact, there's no speed advantage anymore, and it just costs the racer more money when he needs another pack. I'm sorry to say that any attempt to outlaw these packs will only result in some racers disguising them as standard SC cells. (Some modified racers did this for a while with non-legal packs. I imagine the high-capacity, high-dollar SCE pack ended that practice, however.) Third, I strongly believe that the only true motor for stock racing is

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the Mabuchi RS540S. While its speed isn't nearly as fast as the "legal" stock motors available (even before the unscrupulous tampering that seems to be so widespread), the 540S has tremendous longevity. It's also very resistant to tampering. (I can hear the deluge of protests from the motor manufacturers now!) When I started racing, I had the privilege of being exposed to the wonderful people at BoLINK's racetrack in Lawrenceville, GA. In their stock class, they required everyone to run a closed-end-bell Igarashi motor. They charged five bucks for this absolutely tamper-proof motor, and the stock races were very competitive.

I've little doubt about the ability of the motor manufacturers to kill the RS540S as the "legal" stock motor (despite its low cost, and the fact that it comes with nearly every kit sold today). However, I strongly agree with Mr. Provetti that the current timing on today's "stock" motors needs to be reduced for the sake of reliability. It would be simple to set an industry-standard timing angle, and to enforce it by checking all winners' motors with a device such as Kyosho's inexpensive motor checker. Any motor displaying an amp draw or timing angle in excess of the manufacturer's limits is disqualified, along with the driver who doubtlessly tampered with the motor. Yes, folks; in case you wondered, I'm told there's a way to advance the timing on a "stock" motor without breaking the seal on the end bell.

I used to race 4WD modified, and I was successful. As it stands now, I may wind up back in 4WD if I have to pay $28 for an over-the-counter motor, or $35 for a tampered-with motor with half the life expectancy of the already short-lived motors that are today's "state of the art." If stock racing continues on this lemming's course, I could spend more on stock motors in a month than I would spend on modified motors in a year. You can bet I won't, though.

Regrettably, some people want to paint the motor manufacturers as the villains. This just isn't so. They're just trying to make a living by responding to the demands of the racers. So, stock-class racers, we have ourselves to blame. We've started this head-down charge for more speed, only to realize that it very well may lead to the extinction of our hobby. Decisive action needs to be started at the tracks.

Thank you for your consideration.

BRYAN A. WALKER
Copperas Cove, TX

(Continued on page 10)

!

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We think a lot of our readers have ideas that are worth sharing. How many times have you read an article and said "I could do that!" or "That's not the only way to do that; mine's easier!" Could very well be! Here's your chance! We'll be expanding **Radio Control Car Action** and are looking for additional contributors to help us accomplish this objective. Of key importance is the ability to take good photographs; the writing we can help you with. Interested? It's much easier than you might think.

Let's hear from you. Send in your ideas, articles, thoughts and photos; we're looking forward to it.

RICH HEMSTREET
R/C CAR ACTION
AIR AGE PUBLISHING
251 DANBURY ROAD
WILTON, CT 06897

Letters

Bryan, whether or not the responses to your letter are pro or con (and believe me, they will *come), at least you're offering some constructive input, something we could use more of.*

Thank you. CC

Project Delay

Like Oscar Loi in the November issue, I wanted to modify my Turbo Optima. This time, the dealers had hop-ups for the Mid but nothing for the Turbo Optima. Where was your article for the Turbo Optima? The SE examination and the 4WD Shootout were great, but you didn't stick with your plan! I think a "project series" would cover this problem. Please help us!

I agree with you, Chris: The dealers don't realize who puts the bread on their table. If it wasn't for guys like us, the dealers would starve, which, at times, doesn't seem like a bad idea.

CHRIS JANSEN
Smithtown, NY

Chris, let's be fair: There are some great dealers out there, and some not so great, like anything else. You *know which will be around for the duration. As for the Project Optima, Project Javelin is in the January '89 issue, in case you missed it. Remember, the Javelin is an Optima with a cage body, so the article applies to the entire Optima lineage, like the Salute and Turbo Optima. Sorry for the delay.*

CC

Confused on Ads

I'm relatively new to the R/C hobby. I find most of the ads for after-market parts confusing, as they don't always specify which cars their parts fit. My biggest complaint with advertisements for rims and tires. I see ads for tires such as "1/10 sponge tires" with absolutely no indication of size or what rims/cars they fit.

I'm assuming these companies are in business to make money. Why doesn't the industry develop size standards for tires/rims similar to real cars? It would make it so much easier to advertise (and thus order) if there was some standardization. Customers would then be able to know what they're ordering and not be disappointed when the parts don't fit.

JOHN T. MOSLEY
St. Charles, MO

John, you have a valid complaint. There has been very little effort to standardize tire or rim sizes. The problem stems from the off-road 1/10-scale car manufacturers each using different styles of wheel hubs. A Tamiya rear hub won't fit on a Kyosho car. In most cases, however, the tires will fit several different manufacturers' wheels, if the diameter and the width are correct. Hobbico produces the following excellent chart to help racers determine which DuraTrax tire will fit their cars.

1/10-SCALE TIRE CHART

Model	Front Rim Diameter	Rear Rim Diameter
RC10	1.9" (50mm)	1.6" (40mm)
FX10	1.9" (50mm)	1.9" (50mm)
Cosmo, Ultima	1.9" (50mm)	1.9" (50mm)
Pegasus, Icarus, Raider, Assault	1.9" (50mm)	1.6" (40mm)
Optima, Javelin	1.6" (40mm)	1.6" (40mm)
Turbo Optima, Optima Mid, Rocky, Shadow, Salute, Stinger	1.9" (50mm)	1.9" (50mm)
Frog, Hornet, Grasshopper	1.4" (35mm)	1.4" (35mm)
Fox, Falcon, Wild One, Striker	1.9" (50mm)	1.9" (50mm)
Hot Shot I & II, Big Wig, Boomerang, Super Shot	1.9" (50mm)	1.9" (50mm)
Ninja, Samurai, Coors	1.9" (50mm)	1.9" (50mm)

1/12-SCALE TIRE CHART

Model	Front Rim Diameter	Rear Rim Diameter
Fantom, Plazma, Super Alta Porsche	1.37" (35mm)	1.37" (35mm)
12L, 12i	1.37" (35mm)	1.37" (35mm)
Eliminator 12	1.37" (35mm)	1.37" (35mm)

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Efforts such as these should be applauded, and we hope other manufacturers will follow suit.

RH

(Continued on page 14)

PUBLISHER'S PAGE

A TREMENDOUS INDUSTRY precedent was set last year when we sponsored the first Annual Car Action Stock Car Weekend and featured it in our February 1988 issue. Readers and industry people alike responded with unprecedented enthusiasm, so we're back with an encore issue. The Radio Control Car Action Weekend, hosted by Lake Whippoorwill Speedway in Orlando, Florida, has become *the* R/C event, and we plan to continue this tradition. As I mentioned last year in that issue, "Never before has a radio-control race event attracted so much media coverage and the introduction of so many new cars and accessories." Ditto for this year's race.

Publisher Louis DeFrancesco presents Roger Curtis of Associated Electric with the 1988 Car Action *"Car of the Year" trophy at the Chicago Model Hobby Show last fall. Associated's RC10 was the victor last year—who'll be the recipient this year?*

Besides giving our sport so much visibility, an event like this has many other positive ramifications, foremost being that it's a great test bed for product development, just like full-scale NASCAR racing. Companies like BoLINK were testing rubber-tire compounds, McAllister Racing tested some new Lexan bodies and a quick-change battery system, TRC was also testing its quick-change battery system, as well as a long-distance foam tire. Also, the new Speedworks line of stock motors was being put through its paces, along with many other new, innovative R/C products. The results of products being tested under these grueling conditions are better products for you, the R/C modeling consumer. We at *Car Action* plan to sponsor many more big races in upcoming years.

While at the Chicago R/C show last fall, I was able to present Roger Curtis of Associated Electrics with the *Car Action* "Car of the Year" award for 1988. Last year, we placed a ballot in some issues of *Car Action*, asking for readers to vote for their favorite car. Well, the ballot barrage arrived and the Associated RC10 emerged as the decisive victor. Our 1988 *Car Action Yearbook* featured the "Car of the Year" story, and we plan to do it again in '89, so watch for it. To decide this year's champ, we'll be using input from our editors as well as our readers.

Besides our regular monthly theme issues, we've got some really hot specials in the works, and we'll keep you informed as to when they'll be appearing on the newsstands and in the hobby shops. Don't forget: Next issue, we'll be featuring ¼-scale asphalt smokers. Be there! ■

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Letters

(Continued from page 10)

Double Trouble

I read your mag all the time. I saw the new truck, Double Dare, and I was wondering if you could do a shootout with Clod Buster vs. Double Dare. No wimpy stuff like acceleration and duration. Test them in truck pulls, tug of war, mud bog and car crushing.

JIM HALL

Jim, in our April issue, we'll have a showdown between these two twin-motor monsters. But what you may consider wimpy stuff, like acceleration and duration, may be of interest to those who'd like to race against other monster trucks where these attributes are very important. All of your suggested "tests" seem to be pretty rugged, and we'll give it our best shot. As far as doing any car crushing, we can't seem to dig up any volunteers to surrender their cars for the squeeze play! Got a few you want shortened?

SP

Manufacturer's Response to Confusion

I enjoyed reading your "Scoping Out" article on the Tekin Pro speed control.

As you confirmed, it is indeed one of the best competition units available anywhere. It wasn't clear, however, that the unit can, in fact, be used on four cells. This is accomplished with the installation of a jumper wire, as outlined in the instructions. To make things even more clear and simple, a little pigtail lead has been added to all the latest Tekin speed controls.

Thank you, and good racing.

KEVIN ORTON
Tekin Electronics

Kevin, thanks for the letter. We didn't mean to cause any confusion concerning the use of the Tekin ESC-170 for 4-cell racing applications. It's refreshing to see a manufacturer respond to our lack of clarity by modifying his product so that it's even easier for consumers to use. We encourage all manufacturers to continue to improve and simplify their products with the racers in mind.

RH

Scoop Suggestion

I really like your October issue of "Inside Scoop." Excellent descriptions are used to explain the items. The picture of each item is shown in colorful detail, and all parts of the item are listed. The date that the item can be purchased is also included.

One of my suggestions to make the "Inside Scoop" better is to list the suggested retail price of the item. You could also tell what's compatible with it. If you knew the price of it, you could plan your budget to consider buying it.

Thank you for your time and effort to address this issue.

BRIAN JARRETT
Forest Hill, MD

Brian, thank you for your input. It would be a good idea to give a suggested retail price on the items featured in "Inside Scoop," but many are imported, and we often find out about them before they're even in the U.S., which makes it very hard to even guess at what they might sell for. In the future, we'll do our best to give you an idea of what these items will be selling for, so you can adjust your budget accordingly.

SP

Where Oh Where Can My Car Action Be?

I love your magazine! I have only one copy because I can't find any magazines anywhere. Can you send me some order blanks to subscribe to this wonderful magazine?

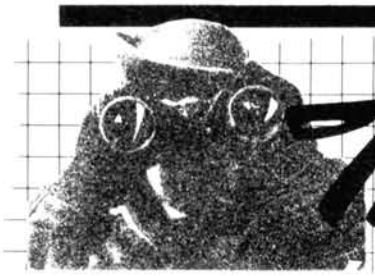
I'm planning to buy a Tamiya Falcon. Do you think I made a good choice? Can you recommend some radio-control cars I should buy?

ANTHONY SHIAO
Edison, NJ

Anthony, by the time you read this, the subscription information should be in your hands. To answer your question: Yes, the Tamiya Falcon is a good choice. Other good cars in that price range that you might want to consider include the Tamiya Thundershot 4WD, the Sonic Fighter, the Kyosho Raider, or, for a little more money, the RC10 basic kit. Any one of these would be a good choice in that price range.

SP

We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity. We regret that, due to the tremendous number of letters we receive, we cannot respond to every one.



The Inside Scoop

by CHRIS CHIANELLI

THE R/C CAR industry is rapidly advancing, with new products being offered at a head-spinning rate. So, I'll make manufacturers nervous, but feed you R/C squirrels who are hungry for info, by bringing you a special report on security leaks and "late-in" items. Here goes!

RC DEBRIS SOLUTION

This month's "Scoop" leads off with an R/C front-loader that's good for super-realistic track maintenance and general clean-up chores at the racing arena. This super, scale, earth mover is also suitable for many other tasks. Well-to-do city dwellers will find it an excellent radio-control pooper-scooper; whatever finds its way into the hopper will never dirty the hands of the operator!

* * *

R/C JET SKI

A radio-control jet ski, hmmmmm. Well, at least they *do* look quick, and they're conveniently electric-powered. I just hope they don't get run over by one of those high-speed electric hydros—deep-vee ocean racers.

* * *

FLASH!!! DRAG-RACING RECORD SHATTERED

According to a late Fax just in from Astro Flight, Inc., Chris Krug of Orlando, FL, shattered the existing speed record of 2.20 seconds (56mph) held by Jeff Davis of Composite Craft. Chris Krug's Astro 05-powered dragster completed the 132-foot course in 2.01 seconds (65mph), setting a new USA speed record. The custom-made chassis had a 2.5-to-1 gear ratio and sported 10 Sanyo 900mAh SCR cells.

* * *

FORWARD-DRIVE KYOSHO AGAIN??

In the December issue of *RCCA*, I show a picture of a front-wheel-drive car that appeared to be a Kyosho car. This car had the motor in front of the front axle. Maybe this was a prototype that nose-dived too much while jumping. The front-wheel version is definitely a Kyosho; note LeMans motor behind the front axle.

* * *

JOEL'S JOURNEY

Trinity Products, Inc. announces the departure of IFMAR World Champion, Joel Johnson, from its racing team and general operating staff. The reason for the move was simple: a change in career direction for Joel. The Trinity staff and race team wish Joel well and hope to see him at race events.

Their current 1/12-scale team is headed by Chris Doseck, Dave Hechler and Bob Light; the 1/10-scale team is headed by Jim Deiter and Kyle Reed.

In case you're wondering where Joel has gone—rumor has it, to Kyosho.

* * *

Keeping the industry BUGGED, I'll see you next time—or sooner, if I catch you in my spyglass! CC

BUDGET RACER

by DICK BRINTON

IN PURSUIT OF "HIGH-TECH" PREY

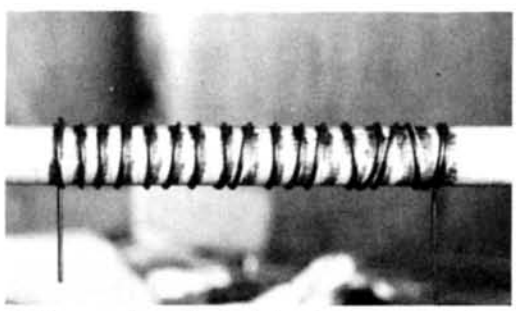
THIS IS THE LAST of the Falcon "Budget Racer" series. In it, I focus my attention on the rear suspension system and the speed controller. As always, the idea is to improve the Falcon's performance for the fewest possible dollars.

After further track testing (nine battery charges, or about an hour of track time), the Falcon was disassembled and inspected. No parts failed, nor were there any signs of any abnormal wear. I was particularly interested in the differential, as I used a gear lube that wasn't made specifically for R/C car gear trains. So far, this lube seems to work very well, and there's no sign of problems. If you want to try it, it's Archer Lube Gel with Teflon, and it's available from Radio Shack ($2.49 for 3 ounces, which is enough for many differential lube jobs.) The wear patterns on the gears looked normal, and the transmission was re-assembled. I used this lube for the suspension pivots and the half shafts (dogbones), and they're as good as new. I don't know what long-term use will turn up, but I'd appreciate hearing from anyone, pro or con.

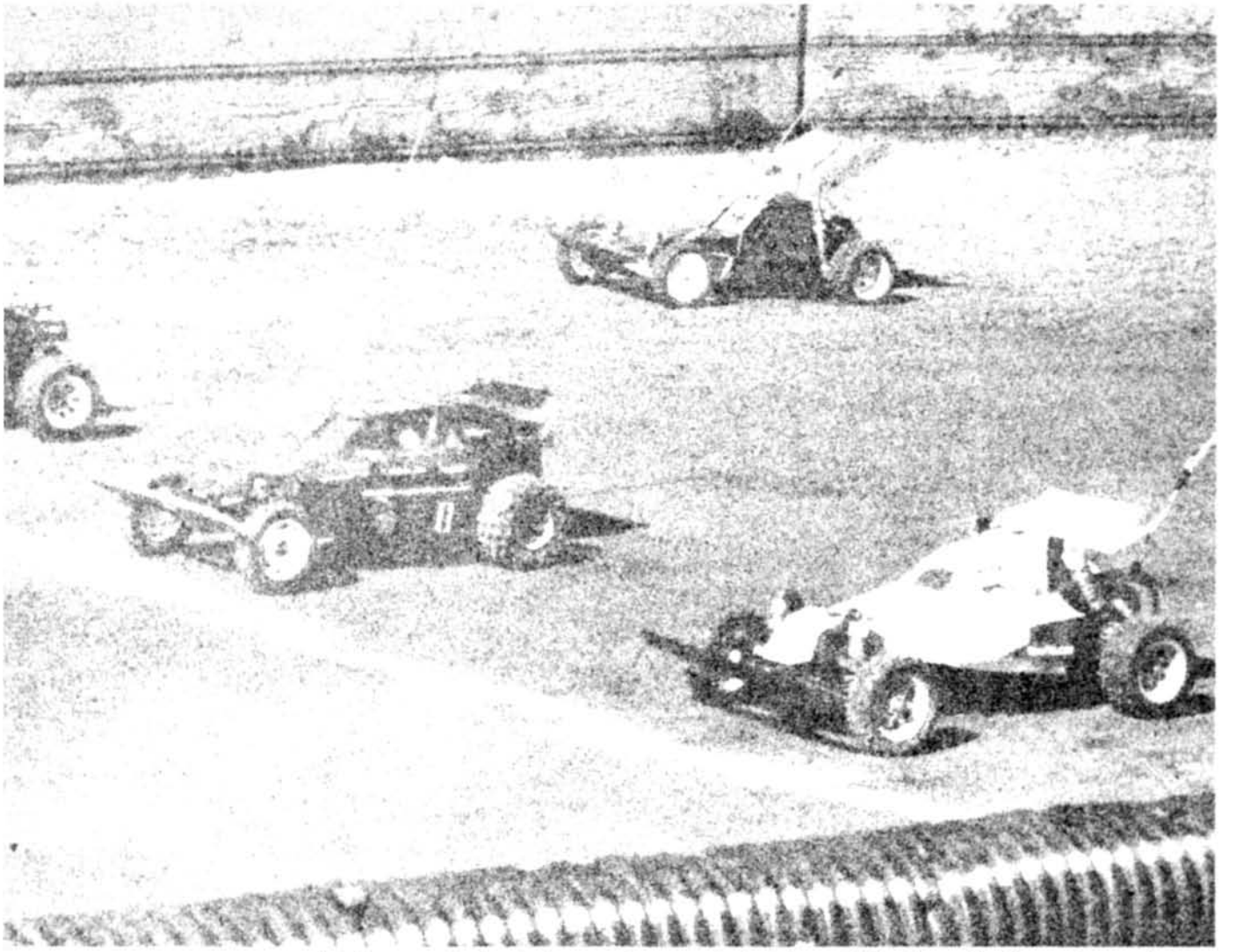
The Falcon's front suspension works very well. The spring/damper units are well-matched, and the suspension travel of 3 centimeters is about the same as that found on Associated's* RC10. But the Falcon's major problem is *rear* suspension travel. At 2.2 centimeters, there just isn't enough movement. I'm sure rear spring/damper units that will work much better than the stock ones are available, but, keeping to our idea of *budget* racing, I decided to see just what could be done with the stock units to improve their performance.

In the Falcon construction manual (page 9) the lock nut for part X8 (damper attachment piece) is screwed all the way into the damper piston shaft. I unscrewed it until six threads were showing, then re-installed X8. The suspension travel increased to 2.4 centimeters. (Doesn't sound like much, but that's 9 percent to the good.) Incidentally, don't cut off the stock suspension stops that limit the downward movement of the rear suspension. If you do, the dogbones will fall out or jam.

Be careful when tightening part X8. It's easy to strip. Yeah, it happened to me, so I reversed the nuts, heated them with a propane torch, and pressed them into part X8. If you decide to try this, don't heat the nuts when they're on the damper piston shaft. Instead, lock a screw with the correct threads into your vise and thread the nut onto



Spring wound onto $^{7}/_{16}$-inch dowel. The starting hole is on the left; a gloved hand holds the final wind on the right.



Start of the heat race: Number 2, closest to the camera, is the Falcon, with hand-wound springs on the rear shocks.

this. Be sure to use gloves to prevent burns and *always* wear eye protection. As an alternative, use Zap Lock*. (Remove X8, fill the hole with Zap Lock, re-install and wait about 10 minutes.)

At this point, I decided to try winding new springs. This was an exercise in frustration until I figured out the right combination. (Oh well, no one promised that handling changes would be easy to scope out.) Here are the ingredients that finally worked and worked well:

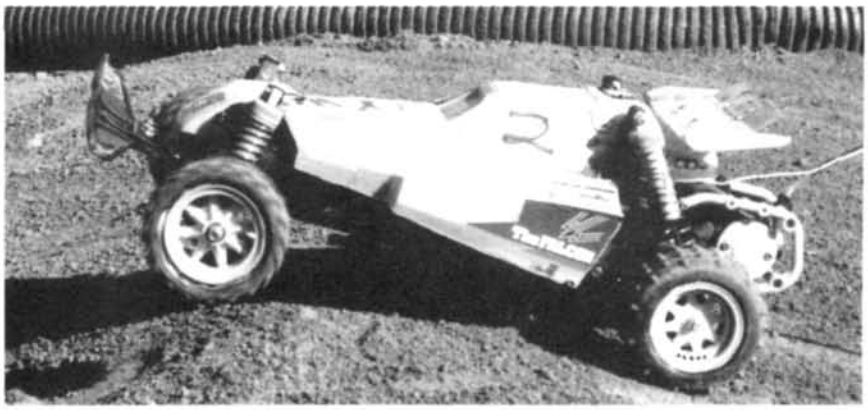
Clamp 1 foot of 7/16-inch dowel into your vise with 6 inches extending out to one side. Drill a 1/16-inch hole through the dowel about 3.5 inches from the end. (See photo.) Measuring from this hole (away from the vise), make a mark at 2 7/8 inches. Mark off 16 equal spaces between these two outer marks. Insert one end of a 36-inch length of .039-inch-diameter music wire into the 1/16-inch hole, then wind it tightly around the dowel so that there are 20 turns of music wire on the dowel. Start with two turns side by side; wrap the next 16 using the marks on the dowel; and end with two turns side by side at the 2 7/8-inch mark. *It's imperative that you wear eye protection and gloves when winding springs.*

When you've finished winding, *slowly* release the wire, but don't let go of it until it's fully unwound. It will unwind, and the spring will be longer than the stock spring. Since this spring wire is of a smaller diameter than the stock spring, the pre-load that results works properly. I trimmed and deburred the springs with a Dremel tool and cutting wheel. After a few trials, you'll be able to make two equal springs that fit your damper units perfectly. A length of music wire costs only 20 cents, and the dowel costs less than a dollar. Once I'd decided on the .039 wire, it took me five tries to make a matched pair of springs.

These new springs are softer than the stock springs, so I increased the weight of the damper oil to 20. This combination worked very well; the rear end stuck like glue and handled the bumps much better than stock. I measured the springs before and after the race and found no difference in length.

Since the pinion gear on the Falcon is limited to either an 18 or a 19 tooth, the best way to change gearing is by changing to tires of a different

BUDGET RACER

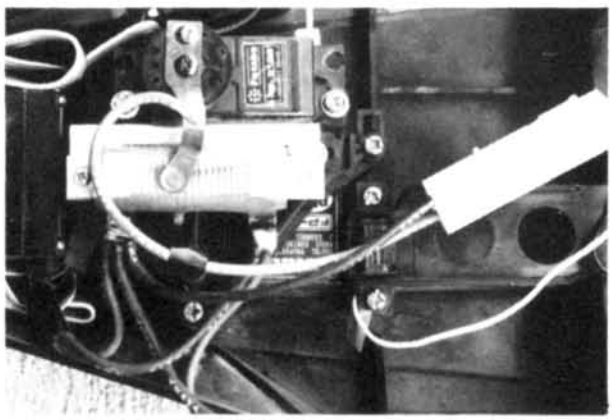


Even on a small jump, the Falcon shows its nose-up attitude.

diameter. I tried a set of CRP* 4212 (Ultima) tires; they changed the effective gearing to 9 percent higher than the stock tires, but, after experimentation on the track, I reinstalled the stock ones. They just work better—on *this* track, with *this* setup.

I thought the front end could stand a further reduction in the push that developed at the higher speeds the Falcon was now running, so I installed a set of CRP 4222 (Fox) tires. These must be glued, since they're slightly too large for the Falcon stock rims. (I used Zap-A-Gap and Zap Kicker, and the tires haven't come off yet.) These very aggressive rib-and-spike tires are light, and they reduced the unsprung weight by 25 percent.

The result of all this? The push was gone and the rear end stuck very well. The Falcon was flying! The only thing missing was brakes.



The Parma speed control is a neat, reliable package when installed on the Futaba S128 servo.

I see a lot of drivers who run budget racers trying to use reverse as a brake. Forget it! This is hard on the motor and diff. Besides, the last thing we want is wheel spin when we're trying to slow down for a turn. I removed the stock speed controller and installed Parma's* No. 11515. This comes unassembled without reverse, but if you want reverse on your car, you can use the No. 11518, which is assembled with reverse. This Parma unit was one of those I tested in the October '88 issue of *RCCA*. It has performed flawlessly. (See photo.)

Back at the track, the Falcon was now turning over nine laps in 4 minutes—two laps better than stock out-of-the-box. That's 28 percent faster! And the total cost in parts is about $36 (front tires: $10; speed controller: about $24; dowel and wire for the springs: $2) That's *budget* racing! But how does it stack up on race day?

I had to find out, so last Sunday I was at the track running in the Production Class. The other cars in the class were RC10s and Ultimas. I felt intimidated, putting the Falcon on the line for the first heat race. The starter blew the horn and we were off. I was booted over the fence in the first turn, eagerly went over it all by myself in the third turn, and was in last place by the time we'd completed about a third of a lap. In spite of my nervous driving, the Falcon still managed to finish 3rd. I was a lot more confident in the next heat, and took 2nd behind an RC10. In the Main, the Falcon took a solid 3rd.

Is the budget racer Falcon a world beater? No, but with these few, simple modifications, it's a tough competitor in any Tamiya, Novice, or Production Class.

Last week, Executive Editor Chris Chianelli told me he's sending me a Kyosho Raider for the next "Budget Racer" series. I can hardly wait. See you at the track!

**Here are the addresses of the manufacturers mentioned in this article:*

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Zap Lock; distributed by Pacer Technology & Research, 1600 Dell Ave., Campbell, CA 95008.

CRP, 3250 El Camino Real B-3, Atascadero, CA 93422.

Parma International, Inc., 13927 Progress Pkwy., North Royalton, OH 44133.

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.

Futaba Industries, 555 W. Victoria St., Compton, CA 90220. ■

by FRANK GUDAITIS

VINTAGE MODEL RACING

Long before radio control, modelers were already racing across the nation.

THE FIRST BUILDERS of model race cars would be amazed at the incredible electronic marvels that are today's R/C cars. Well before WW II, and at least a dozen years before three Bell Labs scientists invented the transistor, a few imaginative young men on the West Coast had a great idea. Tiny one-cylinder gasoline engines were just beginning to power free-flight model airplanes. For these engines, these early builders designed and constructed small working models of full-size midget and dirt-track racing cars.

From the beginning, they were usually faithful copies of their "big brothers." Most were built up on rail frame chassis suspended on either longitudinal or transverse leaf springs. Engine power was directly coupled to the drive axle without even a simple in/out dog clutch. Friction drives were soon replaced by bevel gears in the front or rear axles, and, in some of the later cars, spur gears even replaced the drive shaft.

At first, the bodies were made of balsa wood and bits of sheet metal, but cast aluminum and magnesium soon replaced these less durable materials. As the sport expanded, tires taken from the ashtrays that were popular in

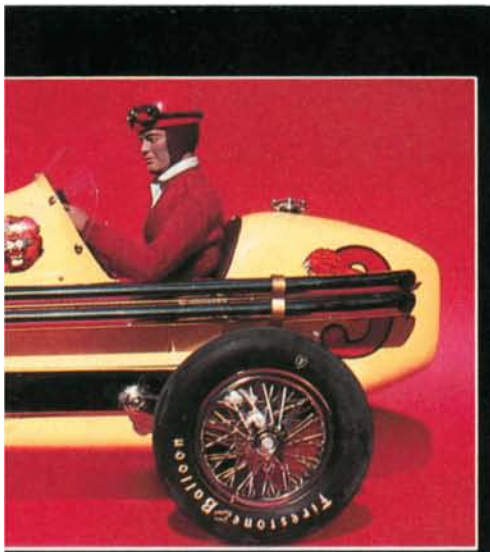
1 2 4 5

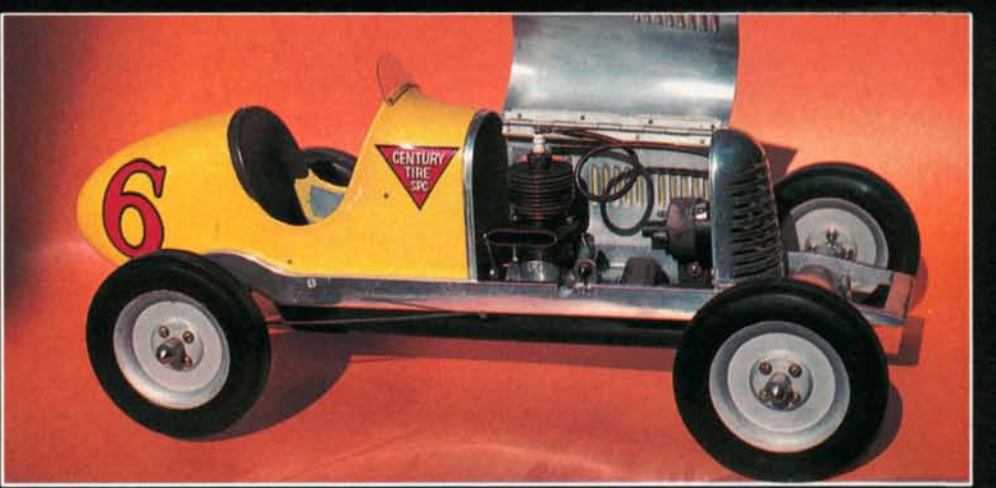
those years were replaced by custom-made wheels.

In the beginning, races were informal affairs where a few people would set up a circular 70-foot-diameter track in parking lots, or on any available smooth area. The cars were attached by thin steel cables to a center pole mounted in an old spare tire and wheel. The top speed of these first cars was usually around 20mph. As was the case with their full-size counterparts, these speeds were to climb rapidly during the next few years, soon reaching 70 and 80mph. Once again, the innovative thinking of the boys on the Coast produced the first rail tracks. These were sharply banked ovals with as many as six rails. This enabled six cars with ball-bearing rollers in contact with the rails to race against each other very much like full-size cars.

The excitement generated on the rail tracks attracted many new enthusiasts to this fast-moving sport. Among them were several movie actors and actresses, like Reginald Denny and dancer Eleanor Powell. Barney Korn, a motion picture special-effects technician who produced the miniature German dirigible for the Howard Hughes classic aviation film "Hell's Angels," also joined the ranks of these miniature race-car builders. Both

(1) Typical dirt tracker of the '30s sponsored by Felix Chevrolet. (2) Earl Gilmore of Gilmore Petroleum sponsored many dirt racers at Gilmore Stadium in L.A., birthplace of midget auto racing. (3) Century Tire Special was front-wheel drive with Herkimer OK .60 ignition engine. (4) Modeled after the fabulous John Ritter's cars; all his racers were yellow No. 3s. (5) Dreyer Special modeled after cars built by Pop Dreyer. (6) Fred Agabashion sponsored this midget and many winning Indy cars well into the '50s.





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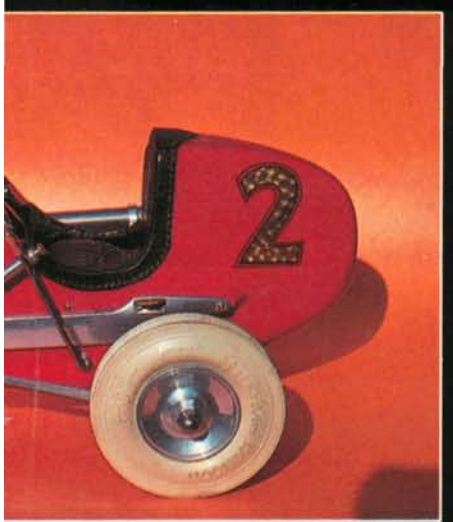

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Photos by Frank Gudalis.

VINTAGE

The Motor M5 was powered with four-cycle five-cylinder radial. Note the power take-off shaft that also drives the rear axle.

Korn and Denny eventually became successful manufacturers of these cars and engines, as the demand for them grew rapidly. By 1940, more than 50 small companies were in business to supply the public with these cars. Some even had very famous names, like Duesenberg of Indianapolis, which built many famous full-size race cars. Another famous name was Hiller Industries, which a young man in his early twenties started, just to build these cars. He was Stanley Hiller, who later manufactured man-carrying helicopters and, eventually, his firm became the giant Fairchild-Hiller Corporation.

Most of these companies were small operations, and they never lacked original ideas with which to improve the sport. A classic example was a miniature centrifugal supercharger, which was developed by the Efficiency Engineering Company of Des Moines, IA. It operated at twice the speed of the engine rpm, and it weighed all of 2½ ounces! Another example of original thinking was the miniature fluid-drive unit designed by Bill Harbaugh of Ashland, OH.

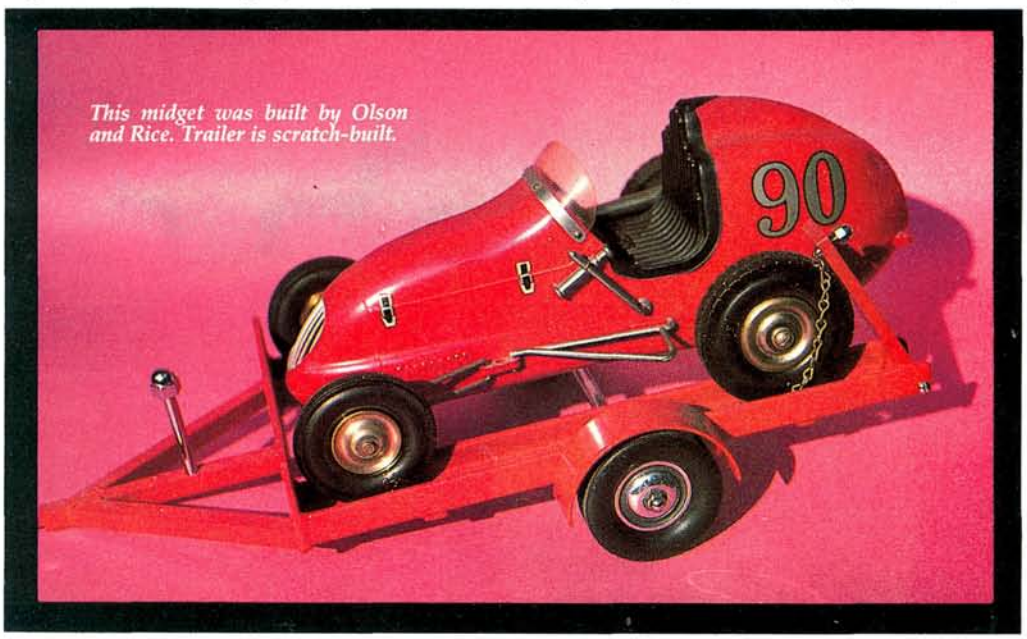
While almost all of these engines were fired by spark-coil and dry-cell battery ignition (glow plugs were to come on the scene a decade later), the Magneto Shop of Emil Vollenweider in Sacramento, CA, sold custom-made tiny magnetos. A car equipped with one of his mags set a new world record of 110.17mph! Following this, like full-size high-performance racing engines, most record-breaking attempts were equipped with magneto ignition systems.

As the sport spread rapidly across the nation, a national organization was formed to govern its activities. The American Miniature Racing Car Association had chapters in many cities, and its members often traveled far to race—not unlike owners of man-carrying midgets and sprint cars. There were even nationals, held annually in large cities.

All this exciting, competitive activity ground to a halt as the demands of WW II put an end to all forms of motor racing. Following the return of peace time, the sport emerged once again, although much of the enthusiasm that had been so prevalent in the preceding era seemed lacking. This was largely attributed to fierce competition as speeds rose ever higher. Buying an off-the-shelf car and engine rarely enabled the new owner to win any races. He would find himself running against very hot cars whose owners were either skilled machinists, or had access to such facilities for re-working their engines for maximum power output.

As a consequence, by the early '50s, the sport was no longer viable. Today, there are only a few tracks left with a handful of enthusiasts. Their efforts have raised the speed of their tiny cars to an incredible 170mph! However, they no longer look like miniature copies of the midgets and dirt-track sprinters of the '30s.

Unpredictably, a new and fascinating hobby has emerged from all this: collecting these old cars. Al Hanak of Sussex, NJ, has a collection of more than 100 antique race cars, several pictures of which grace these pages. There's even a Miniature Antique Vintage Race Cars organization, which collectors have formed to aid them and to promote this intriguing new hobby.



This midget was built by Olson and Rice. Trailer is scratch-built.

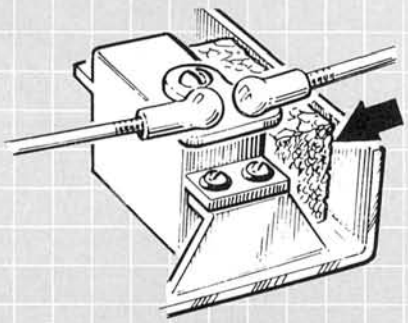
If I've whetted your appetite for information on this fascinating aspect of the hobby, you can write for more information on the Miniature Antique Race Cars Association to Al Hanak, P.O. Box 7249, Sussex, NJ 07461. ■

Pit Tips

CLEANING-FLUID STRAINER

Our contributor makes regular use of BoLINK's Electro Whirl motor-cleaning fluid and economizes by filtering the fluid after use. He merely stuffs a coffee filter paper into a jar, pours the used fluid into it, then discards the used paper. *Note:* He does *not* pour the slightly dirty fluid back into the container of new fluid. By filtering the fluid, he finds he can safely use it two or three times before throwing it away.

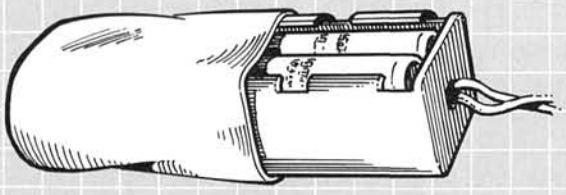
Chris Rogers, Jackson, MI



LOOSE SERVO CURE

This Hornet owner mentions that his servo sometimes wiggles, so his cure was to wedge a block of foam or cork between the servo and the chassis side member. It did the trick.

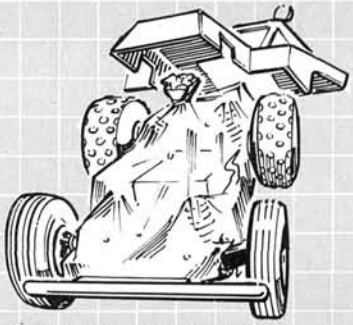
Joe Ercoli, Belmont, CA



WATER-RESISTANT BATTERY PACK

This is a speedy way to render your battery box water-resistant: Simply cut an appropriate length of bicycle inner tube and slip it over the battery pack.

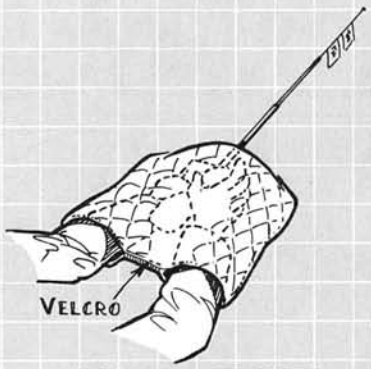
Chris Forester, West Bend, WI



WATER-RESISTANT CAR

This seems to be a speedy and effective method of making your car resistant to splashes. Remove the body, place the whole car in a plastic bag, then tie off the neck. Naturally, you'll need to cut minimum-size holes for the wheels and antenna. Once the bag is in place, you can replace the body. However, if your car has an electronic throttle unit, you *will* need to cool the unit.

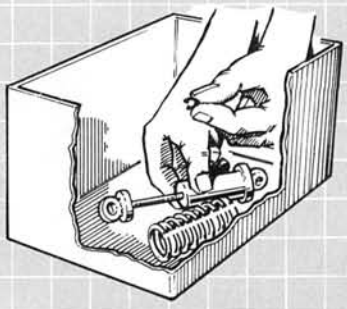
Jason Wine, Aurora, CO



CONTROLLER MITT

If you race in cold weather, your freezing fingers are *insensitive* fingers, so do as this driver does: Using an old towel or an old quilted jacket, make yourself a mitt that covers the controller, allowing only the antenna to poke through. Your hands go in through openings in the bottom and are inside the mitt away from winter's icy blast. Don't worry about not seeing your hands. Do you ever look at your fingers while racing?

Michael Kaczmar, Manlius, NY



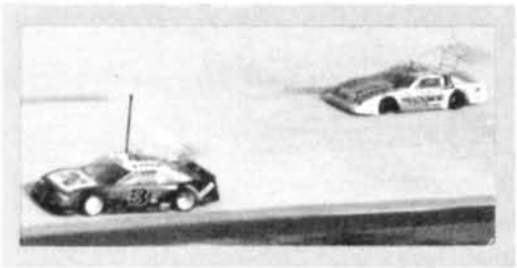
CAPTIVE C-RINGS

Because he had a few C-rings catapult away and become lost while he tried to install them on his shock units, Rick now works with his hands and shock units inside a large cardboard box. Now, if the C-rings jump off, they just bounce off the inside of the box and *stay* in there.

Rick Perkins, Concord, OH

(Look for more Pit Tips on page 34.)

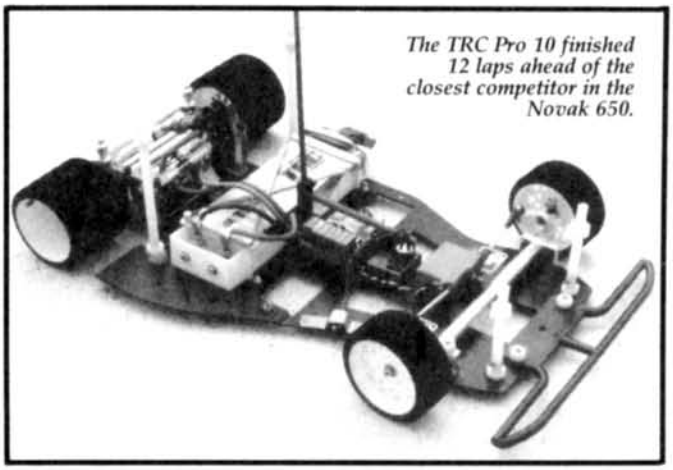
FOUR HOTTEST SUPER SPEEDWAY CARS



THE LEADERS AT CAR ACTION WEEKEND

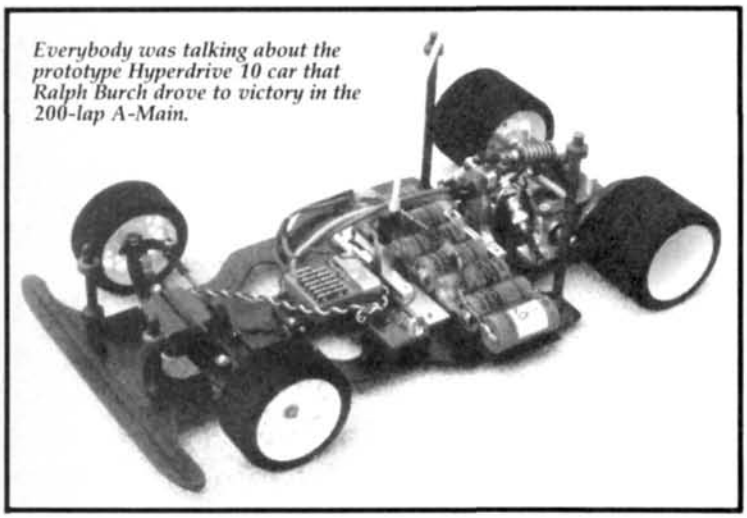
by RICH HEMSTREET

ON-ROAD 1/10-SCALE racing includes more competitive cars from more manufacturers than any other class of racing. At the Second Annual Car Action Weekend, the factory-sponsored invitational racers had a new challenge for these cars. During every race in which the invitational drivers ran, they were required to make at least two pit stops for battery changes. The shortest qualifying races were 12 minutes long, while the A-Main Car Action Race of Champions lasted for 200 laps, and 10 drivers also raced in the Novak 650-lap enduro. Four manufacturers were responsible for the hottest chassis of these top drivers: S.S. Industries*, TRC*, BoLINK* and Delta*.



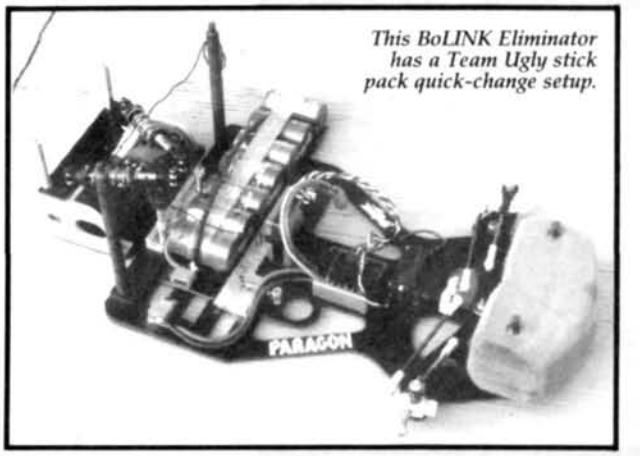
The TRC Pro 10 finished 12 laps ahead of the closest competitor in the Novak 650.

At the conclusion of the Car Action Weekend, everybody was talking about the new S.S. Industries Hyperdrive 10, which, of course, uses the Hyperdrive belt and pulley system. Ralph Burch Jr. drove the single prototype, and though it took him a little time to get the car dialed-in, he qualified 5th fastest for the Novak 650. Despite his car having to be *rebuilt three times* during the 650, he still finished in the 5th spot. The Hyperdrive crew was dialed-in after that, and Burch easily ran away with TQ honors for the Race of Champions, followed by an easy nine-lap victory in the 200-lap A-Main. Despite suffering the weight of a corner marshal who leapt dead-center onto the Hyperdrive during the A-Main, Burch never missed a beat. Remarkably, his car just kept on going! The Hyperdrive crew used a quick-change battery system using stick batteries rather than the saddle-pack design, and this was developed by Team Ugly (more on them later).



Everybody was talking about the prototype Hyperdrive 10 car that Ralph Burch drove to victory in the 200-lap A-Main.

A top-running car since it was introduced at the first Car Action Weekend in 1987, the TRC Pro 10 came out on top of the Novak 650 when "Little Dude" Chris Doseck drove a smooth race to win by 12 laps. Dave Hechler (also driving a Pro 10) finished second to Burch in the 200-lap A-Main.



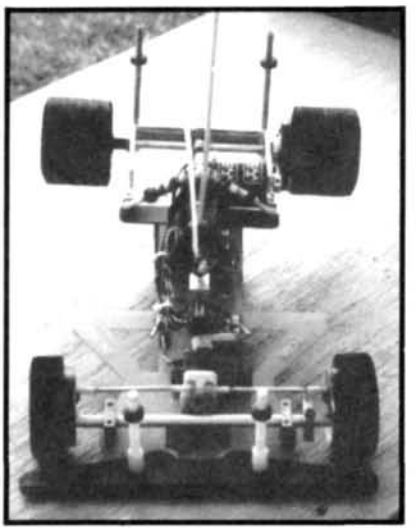
This BoLINK Eliminator has a Team Ugly stick pack quick-change setup.

Both drivers used a quick-change battery-box system with stick batteries, and the TRC team had some of the smoothest and consistently quick pit stops of the Weekend.

BoLINK was shut out of the winners' circle, but it did have the top three qualifiers for the Novak 650. Bud Bartos was the TQ for the 650, but some last-minute changes ended his chance to return to the 650 winners' circle. Also driving a BoLINK, Rick Jordan was the third-fastest qualifier for the 200-lap A-Main. Bartos and Jordan used the new Enduro version of the Eliminator 10—a car with a quick-change saddle-pack system built in. This car is now in production and is available.

Carl Christy finished 3rd in the Novak 650 and Jim Hoffman qualified 3rd for the 650, both running Eliminator 10s with their own Team Ugly stick pack quick-change system. Christy, Hoffman and Dan Louis are "Team Ugly"—BoLINK's Midwest 1/10- and 1/12-scale race team, and their quick-change system worked well all weekend.

Delta also came to compete, and neither of its team drivers had raced at Lake Whippoorwill before. The Delta-Probe car is the designation for its quick-change version of the Delta Villain. The car used quick-change saddle-pack trays.

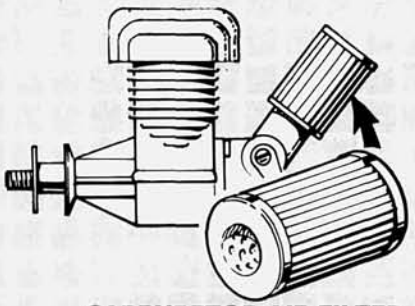

The Delta/Probe car used a saddle-pack quick-change system.

Steve Stifel qualified 6th fastest for the Novak 650. Very early in the race, he fell off the pace and lost a dozen laps to the leader. After falling 12 laps behind Doseck, Stifel was able to match Doseck's lap times during the last 300 laps of the race, but an injury prevented him from racing after that. The Delta car handled well and was very competitive.

S.S. Industries, TRC, BoLINK and Delta were the class of the invitational field at the Car Action Weekend. I'm sure you'll see their chassis in a lot of A-Mains throughout 1989.

**Here are the addresses of the manufacturers featured in this article:*
S.S. Industries, 2109 Patti Ave., Springdale, AR 27764.
TRC, P.O. Box 478, Oakboro, NC 28129.
BoLINK R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.
Delta Manufacturing, 27 Racecar Ct., Lorimar, IA 50149. ■

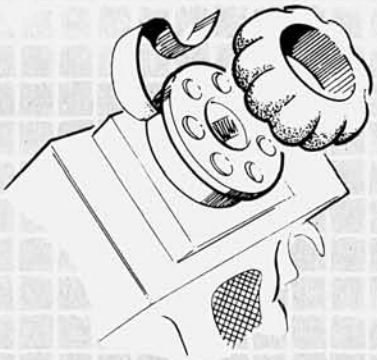
Pit Tips



CARBURETOR AIR FILTER

Go to your auto-parts store and search through the rack of gas-line filters. Find one that will push onto your carburetor. Our contributor found that the Purolator P-119 does the job very nicely.

Bryan Childress, Thomasville, NC



LOOSE CONTROLLER GRIP

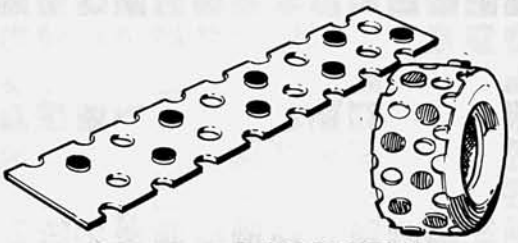
If you discover the knurled grip coming loose from the hub of your controller, a quick trackside fix is to increase the diameter of the hub slightly by winding a few turns of masking or electrical tape around it before pressing the grip back on.

Eric Riley, Twinsbury, OH

LOST ANTENNA BUTTON

If you've ever lost that little knob off the end of your antenna, then you'll know how difficult—if not impossible—it can be to raise the antenna. A replacement tip button is easily fitted by using a model plane wheel collar that fits the rod diameter. If the antenna is hollow at the tip, slip a short length of wire inside the antenna before tightening the collar screw.

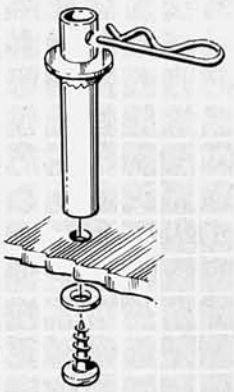
David Sproul, Rochester, PA



FOAM TIRE CONVERSION

After converting his foam tires with these homemade nubbies, this driver found them quite efficient on an indoor gymnasium track. Cut a strip of cycle inner tube, then use a paper punch to make the holes. Collect the little round "punchings" and use CA to attach them to the strip, between the holes, in an alternating pattern. Now use CA to bond the strip around the foam tire, remembering to put a drop of glue in every hole for additional bonding.

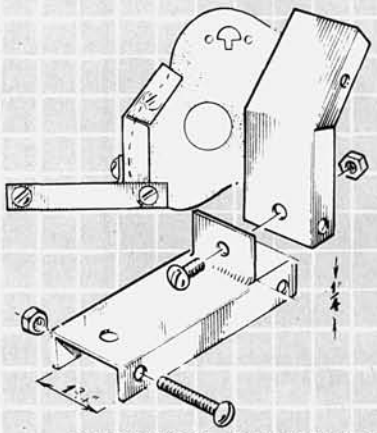
Henry Jacob, Germantown, MD



BODY MOUNTS

This owner makes his own body mounts from a brass tube to which he solders a washer; then he cross-drills holes to accept the body clips. He then selects self-tapping sheet-metal screws, which will tap into the tube, and he mounts the body posts as shown. He finds these homemade posts quite satisfactory on oval-track cars.

Joel Mahoney, Whitehall, MI



BLACKFOOT DRAW HITCH

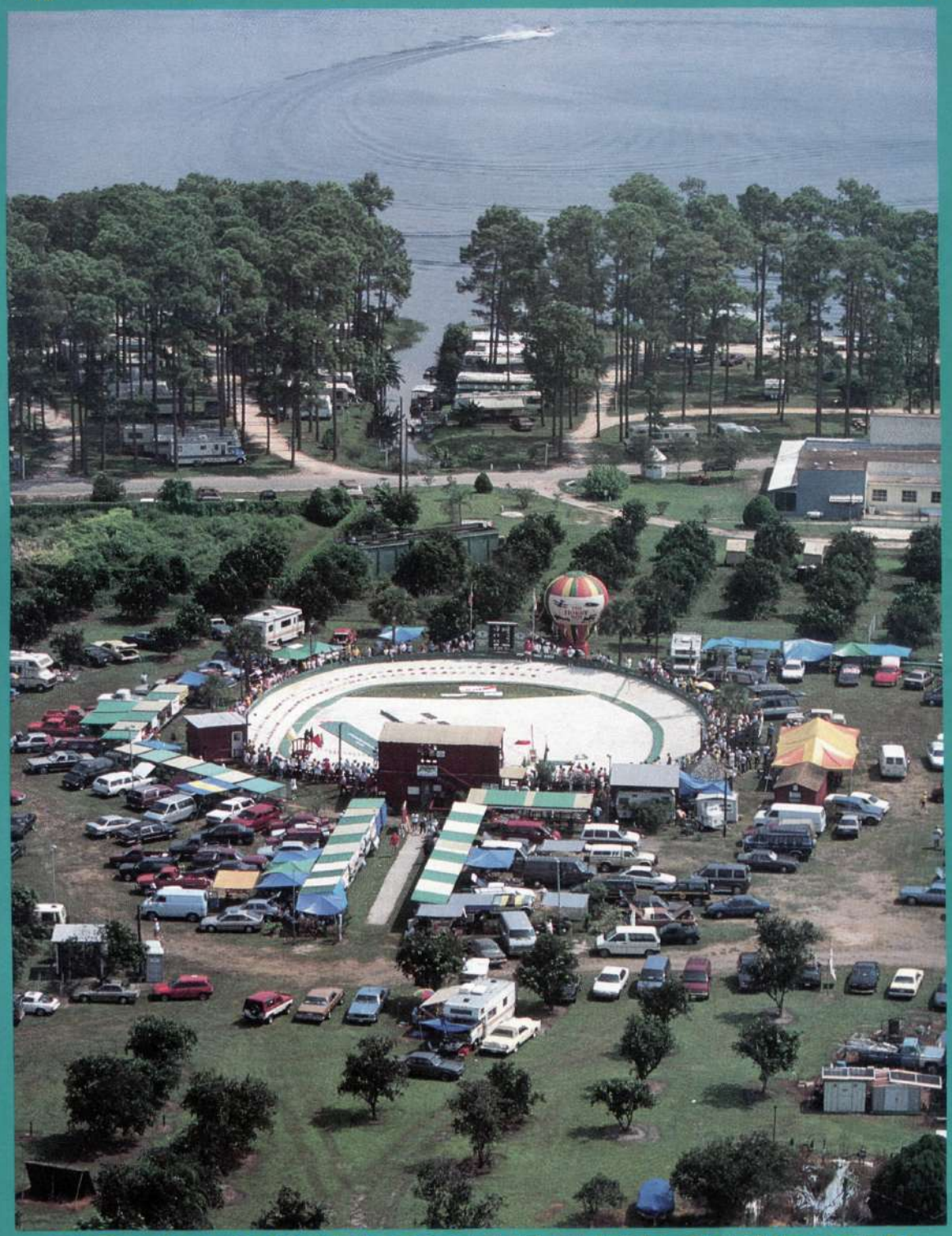
This was made from 1/16-inch-thick metal, bolted together and attached to the transmission case using the existing case bolts. Both of the channel section pieces were 2½ inches long. Obviously, it was effective, because the exercise was repeated for other cars, too.

Chip Martelle, Granville, NY

Radio Control Car Action will give a free one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send rough sketch to Jim Newman, c/o **Radio Control Car Action,** 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO, AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

Radio Control CAR ACTION

W E E K E N D



THEY ALL SHOWED FOR THE EVENT OF THE YEAR!

by STEVE POND

Photos by Steve Pond & Rich Hernstreet

Above: *During the Parade of Cars, spectators and racers are allowed to walk the track and check out the cars.*

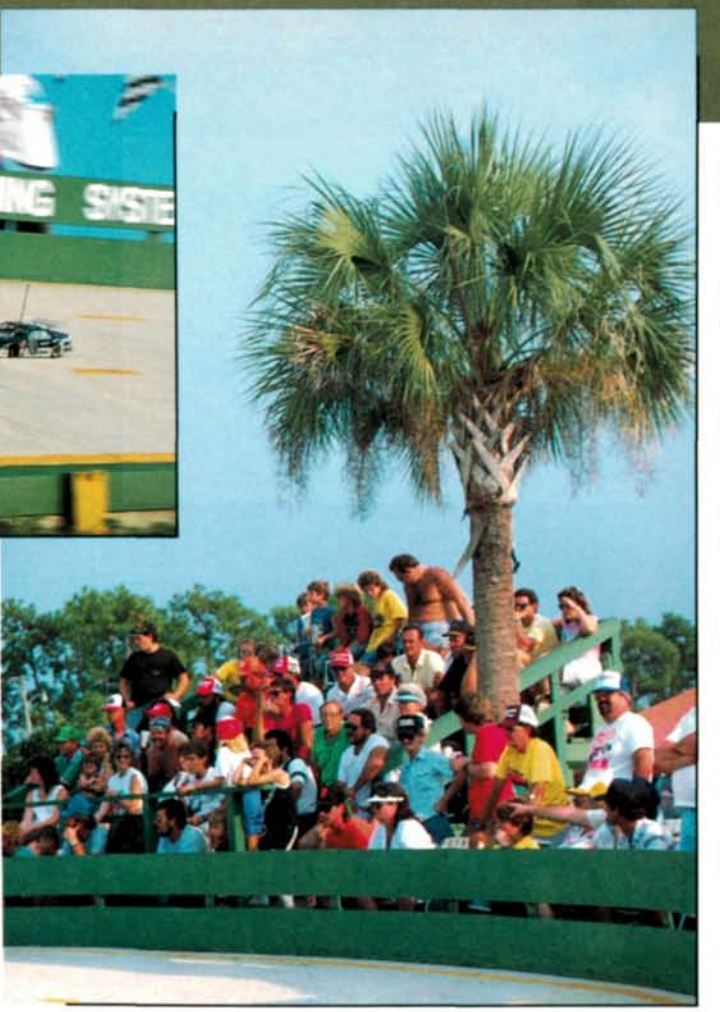
Below Left: *Bob Urban's Lazer Lite featured a six-color paint scheme and a set of custom-anodized Tecnacraft wheels.*

Middle: *The TRC Pro 10 pace car featured a fully functional lighting system with flashers front and rear as well as on the roof. The car was dressed up with the same graphics that are featured on TRC products.*

Right: *Joe Goodwin of Lawrenceville, GA, took 2nd place with the beautiful No. 15 Crisco T-Bird.*

JUST AS THE DAYTONA 500 is considered to be the premier racing event of the year in full-scale stock-car racing, so the Car Action Weekend hosted by Lake Whippoorwill International Speedway in Orlando, FL, is the number-one on-road oval racing event in the R/C industry.

The Second Annual Car Action Weekend took place during late September, and racers from all over the globe converged on Lake Whippoorwill for what promised to be the best racing that 1/10-scale Grand National had to offer. The speedway, combined with the caliber of drivers in both the Invitational and Amateur Classes, presents one of the toughest driving challenges. It also gives factory-backed teams an opportunity to test new motors, batteries, chargers, chassis and drive systems, as well as some of the latest equipment slated for use in the kit versions of their cars.



Carl Christy of Team Ugly is shown here in the No. 1 BoLINK Eliminator taking the high line on the tri-oval of Whippoorwill Speedway during qualifying for the Race of Champions.

The race schedule began on Thursday with 125-lap qualifiers for the Novak 650. Each of the invitational drivers and pit crews ran 125 laps, with three to five battery changes to complete the heat. Just before running the qualifying heat, it was determined that, instead of running for 125 laps, the drivers would run 13-minute heats. At the conclusion of the qualifiers, the 10 fastest drivers would have secured their starting positions for the 650-lap feature. Capturing the top qualifying spot for the 650 was last year's reigning champion, Bud Bartos, with 114 laps. Bartos drove a CAM-powered BoLINK Enduro 10 equipped with an experimental tire supplied by BoLINK. This tire had a rubber "band" bonded to the standard foam donut, and it proved to be so effective that Bartos decided to remove the wing from the car—unheard of, when running the standard foam tire. In addition to removing the wing, the width of the inside tire was trimmed by more than ¼ inch to reduce some of the friction, but it had no adverse effects on the car's handling.

Qualifying in the number-two spot, two laps down from Bartos's pace, was David Timmerman, also driving a CAM-powered BoLINK Enduro 10. The third spot went to yet another BoLINK entry, this time, an Eliminator 10 driven by James Hoffman who completed 111 laps in 13 minutes. Hoffman's car was powered by a Peak Performance motor and batteries, with the speed control of choice, the Novak 1X, handling the current flow. Hoffman was also the fastest qualifier to use the S.S. Industries Hyperdrive belt system, which made its debut at Lake Whippoorwill.

On the outside of the second row in the 4th qualifying position was Chris Doseck, with his Trinity-powered TRC Pro 10. Doseck used a quick-change battery system designed by TRC for the Pro 10, and it seemed to work extremely well, keeping the battery firmly planted in the car, while still allowing quick battery changes. Taking the 5th qualifying position with 109 laps was Ralph Burch, driving the Hyperdrive prototype car, with a Reedy motor, Novak speed control and Gonzo batteries. (Obviously, the Hyperdrive belt system proved to be a force to reckon with.) Right on the heels of Burch, with 108 laps for the 6th position, was Steve Stifel with a CAM-powered Delta car using a prototype quick-change battery system. Rick Jordan sealed his position on the inside of the fourth row, qualifying only 3/10 second slower than Stifel driving his "all-BoLINK" Enduro 10 (he *did* use a Novak speed control). To the right of Jordan, in the 8th spot, was Carl Christy with 107 laps, driving a BoLINK Eliminator 10 with Revtech power. In the last row were Bob Williams (driving a Trinity-powered TRC Pro 10 for the 9th spot) and Kevin Perry, who slid into 10th with his Peak Performance-powered Vicfor machine. At the end of the Novak 650 qualifying, the lights were extinguished as the racers and their crews prepared for the following day.

(Continued on page 40)

SPEEDWAY
CROWN
Kodak
film
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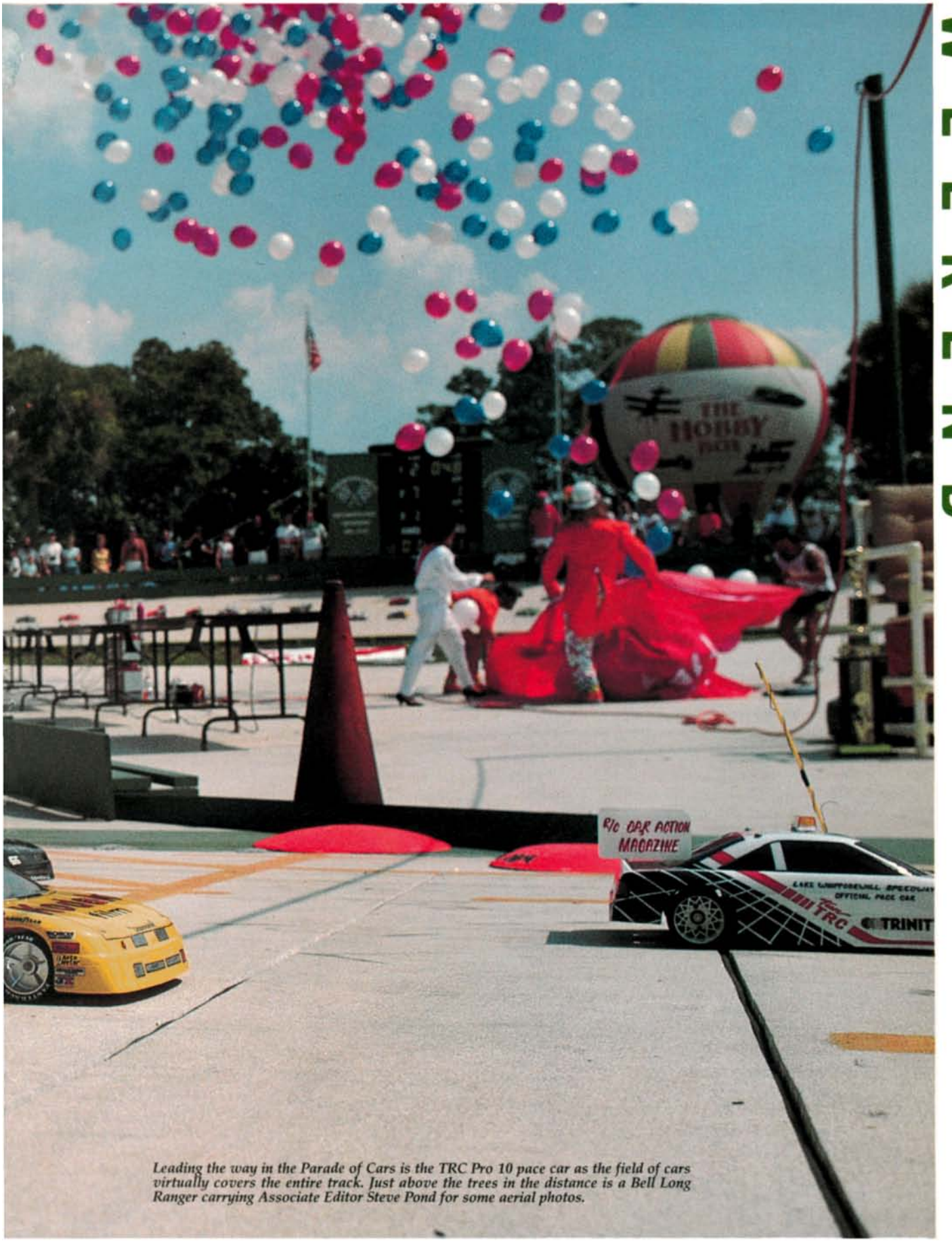


Leading the way in the Parade of Cars is the TRC Pro 10 pace car as the field of cars virtually covers the entire track. Just above the trees in the distance is a Bell Long Ranger carrying Associate Editor Steve Pond for some aerial photos.

Leading the way into the front straight is Concours-winner Chuck Massey with his Havoline T-Bird followed by Joe Goodwin's 2nd-place T-Bird and Dan Toll's 3rd-place No. 31 Oldsmobile.

Friday started another day of qualifying (dubbed the BoLINK Clash), for which each of the invitational drivers ran in 12-minute heats, instead of the scheduled 100 laps, to qualify for the Car Action Race of Champions. The Race of Champions was the final event on the ticket and was to run 100 laps for all Mains up to the B, and 200 laps for the A-Main. Setting what seemed to be the time to beat was Rick Jordan of BoLINK, with 105 laps in 12:05.4. Jordan's fast time stood until Jim Fuller, driving a Reedy-powered Predator with a Hyperdrive belt system, blasted around the oval with an excellent display of driving prowess and snuffed out Jordan's time with a 106-lap run in 12:03.1.

What once again appeared to be an unbeatable time fell to Ralph Burch and the Hyperdrive car running a new CAM motor. (This was wound relatively conservatively, compared with those of his competitors.) A virtually flawless run and excellent pit work by Snuffy Smith and John Robinson netted the Hyperdrive team a TQ pace of 110 laps in 12:04.5! On only his second visit to the speedway, Kent Clausen, driving a Reedy-powered TRC Pro 10 and sponsored by Reedy Motors, was able to take the 4th qualifying position with 104 laps. And 4/10 second behind Clausen was Chris Doseck, also driving a TRC Pro 10 with Trinity power. Filling out the third row beside Doseck was the legendary Bud Bartos, also with 104 laps. Dave Hechler and Tate McDaniel qualified for the fourth row, while Joe Lawrence and David Timmerman filled in the fifth. As the dust settled after the grueling qualifying rounds, the track was closed for a quick cleaning before the 650-lap race, which amounts to 50 miles!

The Novak 650 is the essence of endurance racing and, without a shadow of a doubt, one of the most punishing that any man/machine combination in the R/C industry has to overcome. As any veteran of the Novak 650 will tell you, preparation for the event figures into the winning equation just as much as running it does. Checking each fastener to see that it won't loosen, motor choice, charging 25 or more batteries, ratio selection and tire combinations are just a few of the major concerns during the race preparation.

The action during the 650 is difficult to describe. All players on the team (the driver, spotter, crew chief and pit crew) play a major role. Turning a quick pit time is essential, and many of the teams rose to the occasion with pit stops averaging only 3 to 4 seconds for a battery change. This, and many other factors, began to affect competitors as the race began to take shape.

Jumping to an early lead were Bud Bartos (last year's winner) and Chris Doseck. Both turned in good pit times and lap times to stretch their leads, but, at about the 220-lap mark, Bartos seemed to be slowing

Carl Christy of Team Ugly (left) is shown here with Hal Newell of Paragon Racing Products executing a battery change using the Team Ugly quick-change system, which proved to be one of the most effective designs.

200-LAP RADIO-CONTROL CAR ACTION RACE OF CHAMPIONS

Finish	Laps	Qualified	Name	Chassis	Motor	ESC	Tires	Body
1	200	1	Ralph Burch, Jr.	Hyperdrive 10	CAM	Novak	TRC	McAllister
2	191	7	Dave Hechler	TRC Pro 10	Trinity	Novak	TRC	BoLINK
3	189	6	Bud Bartos	BoLINK Enduro	CAM	Novak	BoLINK	BoLINK
4	187	8	Tate McDaniel	BoLINK Enduro	CAM	Novak	BoLINK	BoLINK
5	179	4	Kent Clausen	TRC Pro 10	Reedy	Novak	TRC	McAllister
6	148	9	Joe Lawrence	Nuckles Conv.	Reedy	Novak	TRC	BoLINK
7	143	3	Rick Jordan	BoLINK Enduro	BoLINK	Novak	BoLINK	BoLINK
8	124	2	Jim Fuller	Comp. C. Predator	Reedy	Novak	TRC	BoLINK
9	81	5	Chris Doseck	TRC Pro 10	Trinity	Novak	TRC	BoLINK
10	49	10	David Timmerman	BoLINK Enduro	CAM	Novak	BoLINK	BoLINK

NOVAK 650

Finish	Laps	Qualified	Name	Chassis	Motor	ESC	Tires	Body
1	650	4	Chris Doseck	TRC Pro 10	Trinity	Novak	TRC	BoLINK
2	638	6	Steve Stifel	Delta/Probe	CAM	Novak	Delta	McAllister
3	590	8	Carl Christy	BoLINK Eliminator	Revtech	Novak	BoLINK	BoLINK
4	548	2	David Timmerman	BoLINK Enduro	CAM	Novak	BoLINK	BoLINK
5	532	5	Ralph Burch, Jr.	Hyperdrive 10	CAM	Novak	TRC	McAllister
6	528	3	James Hoffman	BoLINK Eliminator	Peak Perf.	Novak	BoLINK	BoLINK
7	489	9	Bob Williams	TRC Pro 10	Trinity	Tekin	TRC	BoLINK
8	413	10	Kevin Perry	Vicfor	Peak Perf.	Novak	TRC	BoLINK
9	262	1	Bud Bartos	BoLINK Enduro	CAM	Novak	BoLINK	BoLINK
10	76	7	Rick Jordan	BoLINK Enduro	BoLINK	Novak	BoLINK	BoLINK

AMATEUR MODIFIED RCCA RACE OF CHAMPIONS

Finish	Laps	Qualified	Name	Chassis	Motor	ESC	Tires	Body
1	47	1	Dennis Vindedahl	TRC Pro 10	Twister	Tekin	TRC	BoLINK
2	45	3	John Robinson	Comp. C. Predator	Reedy	Novak	TRC	BoLINK
3	45	10	Dave Raber	Comp. C. Predator	Twister	Novak	BoLINK	McAllister
4	45	5	Tim Lanier	BoLINK Eliminator	BoLINK	Novak	BoLINK	BoLINK
5	45	7	Frank Trinchitella	Comp. Craft	N/A	Novak	TRC	BoLINK
6	45	8	Eric Whitrock	TRC Pro 10	CAM	Novak	TRC	BoLINK
7	44	2	Joel Gish	Vicfor	Trinity	Tekin	BoLINK	McAllister
8	44	6	Rick Pruitt	TRC Pro 10	Peak Perf.	Novak	TRC	BoLINK
9	41	9	Jimbo Evans	TRC Pro 10	Twister	Novak	TRC	BoLINK
10	0	4	Howie Ursaner	TRC Pro 10	N/A	Tekin	TRC	BoLINK

AMATEUR STOCK RCCA RACE OF CHAMPIONS

Finish	Laps	Qualified	Name	Chassis	ESC	Tires	Body
1	43	1	Joel Gish	Vicfor	Tekin	BoLINK	McAllister
2	43	9	Craig Carey	Lazer Lite	Novak	TRC	BoLINK
3	42	7	Frank Trinchitella	Comp. Craft	Novak	TRC	BoLINK
4	41	10	Chris Farrell	C&M Cobra	Dialed	TRC	N/A
5	40	5	James Prince	TRC Pro 10	Novak	TRC	BoLINK
6	40	4	Rick Pruitt	TRC Pro 10	Airtronic	TRC	BoLINK
7	39	6	Bobby Trinchitella	Scratch-built	Novak	TRC	MRP
8	39	8	Ricky Jordan	BoLINK Eliminator	Novak	BoLINK	BoLINK
9	38	3	Matt Dahm	Comp. C. Predator	Novak	TRC	BoLINK
10	9	2	Kevin Lanier	BoLINK Eliminator	Novak	BoLINK	BoLINK

INVITATIONAL 1/12 RCCA RACE OF CHAMPIONS

Finish	Laps	Qualified	Name	Chassis	Motor	ESC	Tires	Body
1	48	3	Dave Hechler	TRC Pro 12	Trinity	Novak	TRC	BoLINK
2	47	1	Bud Bartos	TRC Pro 12	CAM	Novak	TRC	BoLINK
3	47	5	Chris Doseck	TRC Pro 12	Trinity	Novak	TRC	BoLINK
4	46	2	Kent Clausen	Assoc. 12L	Reedy	Novak	Assoc.	McAllister
5	46	6	Tate McDaniel	BoLINK Eliminator	CAM	Novak	BoLINK	BoLINK
6	45	7	David Timmerman	BoLINK Eliminator	CAM	Novak	BoLINK	BoLINK
7	45	9	Johnny Bright	BoLINK Eliminator	CAM	Novak	BoLINK	BoLINK
8	44	4	Jim Fuller	Assoc. 12L	Reedy	Novak	TRC	BoLINK
9	44	8	Jeff Irish	Parma	KRP	Novak	KRP	BoLINK
10	41	10	Jeff Rotruck	BoLINK Eliminator	BoLINK	Novak	BoLINK	BoLINK

considerably—he'd burned up a motor! Bartos had to sit in the pits while his crew worked frantically to install a fresh motor. With Bartos in the pits, Doseck all but ran away with the lead, putting some serious distance between his car and the 2nd-place Delta car driven by Steve Stifel. After dropping back about 20 laps, Bartos was able to come back onto the track with a fresh motor and a hope of catching Doseck, and try, he did. He set the track on fire with lap times that couldn't even be equalled in the 2-minute heats. The first few laps back on the track tripped the timer at 4.9 seconds at over 50mph! These times and the new motor were unfortunately short-lived, as Bartos's car began to lose enough time to convince him that he should park for a 9th-place finish ahead of Rick Jordan, who also burned up a motor. From then on, Doseck never looked back, and he steamrollered to a hands-down victory with a 12-lap margin separating him and the 2nd-place finisher, Steve Stifel. Stifel was the only other driver to complete the race with over 600 laps; the rest of the field had their share of minor mechanical problems that took them out of contention. Rightfully, the TRC/Trinity team was pleased with its decisive win and the outstanding performance of the entire team in the 650.

The third day of competition marked the beginning of qualifying for the Amateur Classes and the 1/12-scale invitational drivers. These drivers ran three rounds of 5-minute qualifiers, and the caliber of the amateur drivers was as impressive as that of drivers in the Invitational Class. Turning in the fastest qualifiers in the Stock Class were Joel Gish (with a total of 44 laps in 5:05) and Kevin Lanier, who turned in the second-fastest time, almost a lap down from Gish. Matt Dahm was only a few seconds behind Lanier, with a 42-lap run in 5:00.5. In the Modified Class, Dennis

(Continued on page 78)

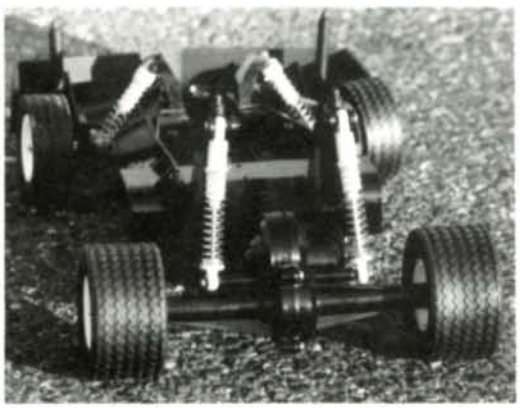
PANDA STOCKER PREVIEW

by STAFF

A STOCK CAR FOR THE MASSES

FROM February through November, stock-car racing fans across the country can watch NASCAR races on TV. Each new racing season kicks off with the biggest race of the year: the Daytona 500. During these ten months, Bill Elliott, Richard Petty and Dale Earnhardt race wheel-to-wheel in 30 scheduled races. With the use of in-car cameras, fans can get a feel for driving these cars at speeds of over 200mph. Each of the top teams spends more than a million dollars a year to go racing.

But, now, anybody can afford to go stock-car racing. Global Hobby Distributors* 1/10-scale Panda Stocker is an entry-level on-road racer. The kit is designed for quick and easy assembly. Even a beginner should be able to follow the step-by-step instructions without any problems.



Pre-built shocks provide lots of travel for racing on rough surfaces.

The four coil-over shocks are pre-assembled at the factory. A fully covered tub-style chassis protects your radio system while racing. The rear axle/gearbox unit pivots freely on a single ball connector to provide plenty of suspension travel for racing on rough surfaces.

The Panda Stocker can be raced in parking lots or even on large driveways. A clear NASCAR Chevy Monte Carlo body is included with the Stocker, along with a full set of decals.

Watch for *RCCA's* full track report on the Panda Stocker in the near future.

Here is the address of the company mentioned in this article:

Global Hobby Distributors, 10725 Ellis Ave., Fountain Valley, CA 92728. ■

RACER'S EDGE

by JOEL JOHNSON

IN THIS MONTH'S Racer's Edge I'll talk about making an informed choice of a modified motor. You'll learn how to choose a motor that will work for your track and how to arrive at that decision sensibly. Before you go to a hobby shop to buy an expensive modified motor for your buggy, you should know a few things:

- how long is your track?
- how long is the straight? (or is there one?)
- how tight are the turns?
- is the traction good or bad?
- do you have a 4WD or a 2WD?
- how good a driver are you?

Once you have all these questions answered, you're ready to purchase a motor.

Let's look at some of the "motor lingo." What does "number of winds" mean? In general, the lower the number of winds or turns the motor has, the more rpm the motor will produce and the narrower the power band will be. This is why 4WD motors don't have many turns on them, because you're able to apply much more power to the ground and a wide power band isn't essential. Wire size is next: The lower the wire gauge number, the bigger the wire is and vice versa. The bigger the wire size (or lower the gauge number), the faster the motor will be. Simple, right?

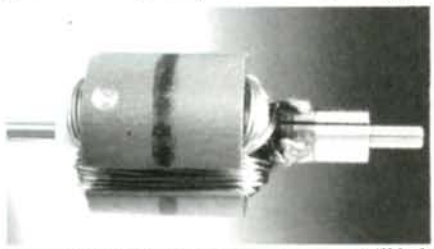
There are four choices for the number of strands of wire that the motor has: single, double, triple or quad, standing for one, two, three or four strands of wire wound onto the armature at the same time. Each one of these types has a trait. Generally, a single will have more bottom end than any of the others, and a quad will have more top end. If there are more strands of wire on an armature, it will have less bottom end and more top end. This explanation is very general and could be elaborated on, but then I'd be getting into the physics of how an electric motor works, and that's *complicated*. For now, this is all you need. (Keep in mind that understanding what each characteristic does is the easy part; understanding what they do when you *combine* two or three isn't so easy.)

Joel suggests sticking with big-name manufacturers when purchasing an $80 modified motor.

Now that we're armed with all this potent information, let's go back to my earlier questions and pick out some traits to look for. For this, I'll use an imaginary track and a 2WD car as an example. Let's say that the track has a 90-foot straight with a windy infield and that the traction is fair. With this in mind, I'd probably look for a 19- to 22-turn double or triple. (Manufacturers usually don't give wire size.) The number of turns is on the mild side because it's a 2WD car. The number of strands will reduce the bottom end to make the car easier to drive, but it will give me the top end I'll need for the long straight. With the mild wind, I'll also be able to run a bigger gear, which will again give me more top end and less low end.

When choosing a motor, a 2WD should be between 19 and 23 turns with a double or a triple wind, and a 4WD should use a single wind of anything between 15 and 18 turns.

When you arrive at the local hobby shop, keep in mind that many have a particular brand of motor that they like to push. Usually, they're receiving a bigger discount from that manufacturer through a special deal, or one of the guys behind the counter is sponsored by that manufacturer. There's really nothing wrong with what they're doing, but just make sure that the motor you end up with is the one that best suits your needs. Listen to what the salesman has to say, but make your own decision. Don't buy a motor just because the local hotshot wins with it; he wins because he's a good driver.



The number of turns on the armature will help you to decide which motor is right for your car and track.

One last bit of advice: Try to stick to the mainstream motor manufacturers when purchasing your next $80 motor. These are the companies that support the hobby and have the race teams to develop the best products. Stay with companies such as Reedy*, Twister*, Trinity*, Losi* and Revtech*, and you won't have any problems with performance or service. Good luck and good racing!

**Here are the addresses of the companies mentioned in this article:*

Reedy Co., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Twister Motors, P.O. Box 31228, Indianapolis, IN 46231.

Team Losi, 1655 E. Mission Blvd., Pomona, CA 91766.

Revtech R/C Products, 7401 White La. #19, Bakersfield, CA 93309. ■

THE HOTTEST MOTORS

by STEVE POND

High-voltage winds at Whippoorwill

WITH RACES LIKE the Novak 650, the 200-lap Race of Champions, the 125-lap qualifiers and the Acutrak Dash (which lasts only 2 minutes), you can see the need for a wide variety of motors at Whippoorwill. Quality motors are also a must for the Invitational Class at the Car Action Weekend.

At last year's first Annual Car Action Weekend, motor manufacturers had to make an educated guess as to which motor configurations would work best. Since then, they've made considerable progress toward building a more efficient and durable motor that will withstand the rigors of Whippoorwill. The operating efficiency of the motors at Whippoorwill plays a much bigger role than that of the motors used to run 4- or 5-minute races. If your motor uses up just 6 seconds of additional run time for every battery pack, in an event like the Novak 650, you'd be 20 to 25 laps behind at the end of the race! Get the picture?

Durability is also a major consideration, as the motors run for more than 1 hour, 15 minutes during the Novak 650; this is probably the *most* punishment one of these motors will ever have to endure. (Remember that during an average Sunday race, your motor might get 20 minutes of collective run time on the ticker, and it will have a chance to cool off after 5 minutes!) The motors used in the 650 ran for close to 1½ hours with no more than 10 seconds to cool during pit stops.

It's obvious that heat is also a consideration when choosing a motor for an endurance race. Most, if not all, of the motors brought to Whippoorwill were equipped with wet magnets and hard brushes to combat the wear caused by heat. Chris Doseck, winner of the Novak 650, obviously had the motor of choice for the event—a Trinity* Whippoorwill motor. According to Trinity, you can buy this motor at a hobby shop, but without an aluminum end bell, which dissipates heat much better than nylon and should be included on a motor designed for endurance racing. This motor features wet magnets, hard brushes and a 17-turn armature that, to our surprise, showed no more than usual wear, even compared with a motor used in a 5-minute heat.

The winning motor for the Race of Champions 200-lap feature was manufactured by CAM Racing Motors*, and run by Ralph Burch, who dominated both the qualifying *and* the Main. Burch's motor ran dry magnets, hard brushes and a 15-turn armature in an Air Supply can.

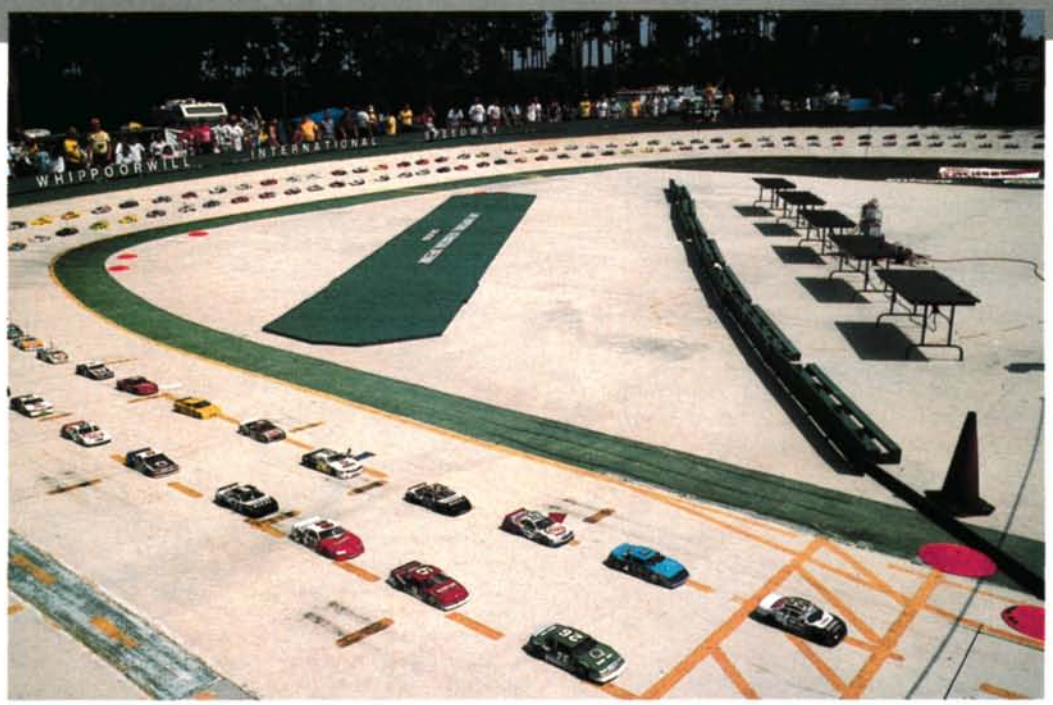
Bragging rights for the Invitational portion of the Acutrak Dash went to Jim Fuller with his Reedy*-powered Predator. Fuller's Reedy motor featured a set of soft brushes, wet magnets and an 11-turn armature. Fuller turned 21 laps in the 2-minute run, but another impressive run turned in by Dave Hechler netted the fastest time of the night (5.6 seconds at more than 50mph). Joel Gish turned in the fastest time of the day in both the Invitational and Amateur Classes, and he also received the Top Amateur Driver award. Gish also turned 21 laps, but he was able to do it .5 second faster than Fuller to give him the bragging rights for *both* classes. Gish ran a Vicfor Concept 1 equipped with eight SCR cells and a 16-turn Checkpoint* motor. The motor was equipped with special brush hoods and brushes of about half the size of those you'd see in an off-road motor.

Another motor that must be mentioned is the new Speedworks* Superspeedway Stock motor that was handed out to the amateur drivers in the Stock Class. Without going into great detail on the idea behind the new stock motor, I'll just say that it's a 25-turn motor wrapped with 21.5-gauge wire, with only 5 degrees timing. Its performance equals that of a 27-turn motor, with significantly increased timing, which shortens the life of the motor but improves performance. Although we don't expect the "powers that be" at ROAR to approve this motor for stock racing, NARA (the sanctioning body for the Car Action Weekend) has approved this motor for very obvious reasons, and we hope the other organizations will follow suit. Maybe ROAR will surprise us!

**Here are the addresses of the manufacturers mentioned in this article:*

Trinity, 1901 E. Linden Ave., #20, Linden, NJ 07036.
CAM Racing Motors, Rt. 3 Box 680, Huntersville, NC 28078.
Reedy, 3585 Cadillac Ave., Costa Mesa, CA 92626.
Checkpoint Racing, 729 W. 16th St., #B4, Costa Mesa, CA 92627.
Speedworks; distributed by Trinity. ■

If the high-banked oval didn't catch on, it would have to become a

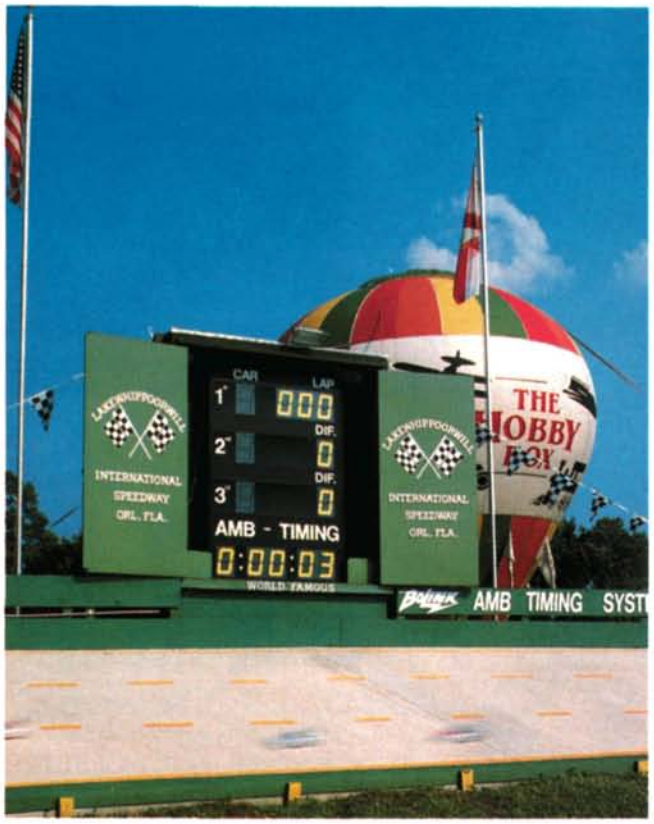


THE HISTORY OF LAKE WHIPPOORWILL INTERNATIONAL SPEEDWAY

by RICH HEMSTREET

ALMOST EVERY R/C car enthusiast has heard of the track located in Lake Whippoorwill, FL, where major races are held. Now, as Paul Harvey would say, "Here's the rest of the story."

The man behind this track is Bob Hosch. He has always had a love for racing of any type: cars, boats and motorcycles. His first love was oval-track stock-car racing. Not surprisingly, Hosch greatly admires Bill France, the man who created NASCAR and built Daytona International Speedway. Under France's guidance, NASCAR has become the most successful full-scale racing organization in the world.



In 1983, Hosch and his wife, Yvonne, attended several national R/C events and were very disappointed. While the clubs running the events did a good job, the results were boring, because the races lacked the color found at NASCAR events. Hosch also noticed that there were no high-speed oval races. He decided to follow in France's footsteps and provide a track with an atmosphere he felt R/C racing deserved. He built a banked dirt-oval track at the site of his 60-acre resort and campgrounds on Lake Whippoorwill. Soon, local drivers were flocking to his track for high-speed oval racing.

After six months of racing, the county authorities shut down the racetrack; they said the property wasn't properly zoned for operating an R/C speedway. For several months, Hosch fought through the appeal process before the proper zoning was finally granted.

After the zoning battle, Hosch started looking ahead again. While dirt-oval racing had its appeal, France's Daytona track was still the ideal. So Hosch found an engineering company that would design a track after the famous Daytona Speedway; but this high-banked tri-oval would be scaled down for 1/10-scale R/C cars. The 384-foot track couldn't be made of asphalt because the paving equipment couldn't be used on the 33-degree banking on

the tight corners, so they decided to build the track of concrete. To avoid possible radio problems, no steel reinforcements were used in the concrete. For maximum traction, a mixture of concrete and fiberglass was used and the track surface is a full 6 inches thick. Initial construction of Lake Whippoorwill International Speedway cost in excess of $100,000.

When the new paved track opened on November 1, 1985, there was only one company making 1/10-scale on-road cars. Skeptics said the track would never catch on, to which Hosch replied, "If it doesn't, I'll just turn it into a huge swimming pool."

Today the track continues to grow, as 1/10-scale on-road racing has become the most competitive arena in R/C racing. New products are frequently tested at Lake Whippoorwill before they're introduced at major events. Manufacturers are quick to point out their on-track successes from Lake Whippoorwill, and rightly so. When Hosch holds events at Lake Whippoorwill, factory drivers receive special invitations to compete in the Invitational Class. These top drivers are given the best (and most visible) spots on pit row; here, the best drivers in the country compete.

Every major event is a spectator (and racer) extravaganza. More than 40 paid, uniformed, race officials handle everything from tech inspection to cooking the famous Whippoorwill "Buzzy" burgers. Drivers don't have to worry about lap scoring or turn-marshaling, as the officials take care of those chores. Hosch and his crew of announcers keep up a continual dialogue on the P.A. system, building up the drama throughout the race weekend, to the point where everyone feels the importance of the main events.

Hundreds of spectators are on hand for every major race. The pre-race ceremonies include the singing of the national anthem, a balloon release from the infield, sky divers, the introduction of Miss Whippoorwill and the Parade of Cars. This Parade of Cars has become the most photographed portion of any Whippoorwill racing event. In terms of promotion, pageantry and organization, Hosch has set the standard in R/C racing.

The longer races run at Lake Whippoorwill by the invitational drivers aren't just run for variety; they're designed to get the spectators more involved in the sport. Four- and 5-minute races just don't offer the excitement of 200-lap 20-minute events. And if spectators show more interest, so will outside corporate sponsors and, eventually, TV coverage will be available for our sport.

New R/C superspeedways have been built in Georgia, Alabama, Illinois and California, and several others are reportedly under construction. The progressive racing organizations of NARA and NORRCA are interested in promoting a national series for 1/10-scale on-road cars. At Lake Whippoorwill, plans are underway for the construction of a 500-foot dirt-oval for 1/4-scale and 1/10-scale dirt-oval cars. If this effort is successful, Hosch plans to pave the track in a couple of years. Until that time, dirt and concrete tracks will coexist at Lake Whippoorwill International Speedway. Now you know the rest of the story! ■

NORRCA 88 DIRT OVAL NATIONALS
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2WD A Main

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These are the tools Von Erich considers to be the absolute minimum required for successful racing.

INSIDE VON ERICH'S GARAGE

TRACKSIDE ORGANIZATION

by ERIC GOLDSCHRAFE

IF YOU'RE ALREADY an accomplished racer, you know what tools and spare parts are needed for racing. If you're a novice, or still just thinking about getting started in the game, this article will put you on the right track; however, even if you've been racing for quite a while, this article might give you some good ideas. While it's technically oriented towards the on-road racer, most of the principles will apply to off-road and dirt-oval racing; you'll just have to plug in the right set of requirements.

The *RCCA* racing team, currently operating seven different brands of on-road cars, provides an on-going post-product-review evaluation and uses several drivers, a crew chief and a team engineer. The drivers only concern themselves with racing and corner-marshaling, while "Scoping Out" writer, Rudy Meyer, and I handle preparation, repairs and statistical data. These records allow us to keep tabs on performance and reliability, and our evaluations will be presented periodically in comparative match-ups. We've also figured out what we need at the track, and we've outfitted the toolbox and spares container accordingly.

Von Erich's toolbox has enough tools and spare parts to make any necessary track-side repairs.

A peek into my tackle-box-turned-tool-chest reveals a lot of small tools, and several that might seem too large for 1/10-scale cars. There's even some duplication, and the whole deal weighs about 20 pounds. It used to contain even more tools, but I removed the ones that were never used, and I arranged it so that everything is easy to locate in a hurry. In a wooden locker, we also carry a battery charger and a digital multimeter, spare tires in matched sets, several cans of different fluids, a couple of radios and a bunch of battery packs.

Here are the tools and supplies that I consider absolutely necessary, even if you only race one car occasionally:

- screwdrivers and/or wrenches to fit every nut and bolt on your car
- a soldering iron and solder (battery-operated types are available for outdoor racers)
- wire cutters and strippers
- a hand drill (I use an old power-drill chuck and key, and a basic selection of bits)
- instant glue (CA) and thread-lock
- silicone sealant
- oils and greases
- extra servo tape
- 5-minute epoxy
- magnetic probe
- hobby knife
- strapping tape
- scissors

With this equipment, you should be able to fix just about anything that breaks. If something on your car has broken in the past, and you haven't replaced it with a stronger part, assume that it will break again and carry a spare. If you tighten all your nuts and bolts during routine maintenance, theoretically, you won't need any spare hardware. In real life, it's when you take the car apart at the track that parts are lost, so it pays to have a small box containing enough common hardware to

cover an emergency. You rarely have enough time to make the needed repairs, let alone look around for lost parts. If your budget is tight, you can always look for the missing screws *after* the race. Wheel nuts, E-rings, gear setscrews and shock-absorber hardware are likely candidates for this parts box. If you've been racing a while, you know that no matter how well you set up your car at home, you'll always want to experiment a little at the track to find the "hot setup."

Besides the aforementioned list of tools, there are a few others that can make life a lot easier when you have to repair some "battle damage" between rounds. Something as simple (and all too common) as a broken body-mounting post can be a real hassle to change (assuming you *do* have a spare) when you only have 15 minutes between heats and must also charge the battery and make some adjustments. An inexpensive adjustable wrench or a set of channel-lock pliers will grab the stump of the broken post and allow you to take out the screw. In many cases, the screw strips when you try to remove it—*now* what do you do? If you have an old pair of side-cutter pliers, your can probably cut through the post and the screw, and the head will fall free. The larger these side-cutters are, the easier the job will be. (They don't have to be new ones, since cutting bolts isn't really their intended purpose.)

Another "luxury" item, which really isn't that expensive, is a ¼-inch-drive socket set. You're not rebuilding a Rodeck Chevy 427, so you can get away with the cheaper department-store sets, as long as they have the sockets you'll need. These come in inch and metric sets, too. Unless it's being used for something else, the speeder handle in my set has the socket for the differential adjusting nut mounted on it. This way, I don't have to fumble through a bunch of sockets looking for the right one—it's ready to use and easily located.

Another worthwhile "tool" is a gear caddy, which is available from several companies, including Paragon* and Parma*. This little rack keeps an assortment of pinion gears handy and easy to pick out. An inexpensive stopwatch will record your lap times to see if you made the right gear selection, and you won't have to wait for the next race to find out that you goofed.

Radio Control CAR ACTION

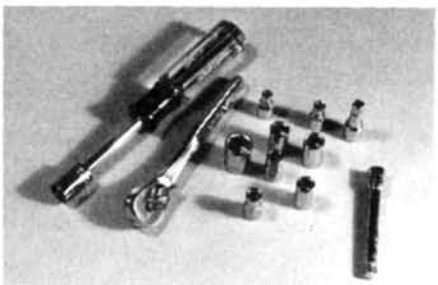
WEEKLY MAINTENANCE CHECKLIST

☐ CAR ☐ HARDWARE TIGHT DATE _____
☐ AXLES & BEARINGS CLEAN ☐ ALIGNMENT OK
☐ MOTOR CLEAN & WIRING TIGHT
☐ DIFF CLEAN & LUBED ☐ DIFF ADJUSTMENT OK
☐ RADIO CHECKED OUT ☐ TRIM OK FREQ # _____
☐ CHASSIS WIRING OK & SECURED ☐ BODY MOUNTS OK
☐ FASTENERS IN PLACE ☐ BODY CLEANED & WAXED
☐ RADIO ☐ BATTERIES OK
☐ BATTERIES ☐ CHARGED ☐ WIRING OK
☐ TIRES
☐ TOOLS
☐ CHARGER
☐ METER ☐ BATT OK
☐ FAN
☐ FLUIDS
☐ GROUND EFFECTS ☐ FORMULA 1 ☐ SILICONE

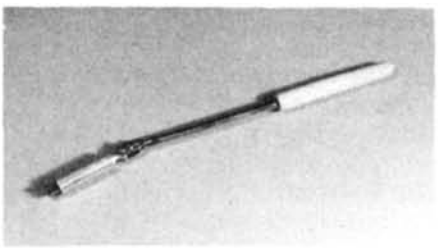
	START	PLACE	LAPS	# OF CARS
HEAT # 1				
HEAT # 2				
MAIN				

COMMENTS: _____

Von Erich uses these checklists both to prepare for a race date and to record his results.



While not necessary, a ¼-inch-drive socket set can be very useful.



A magnetic probe is great for retrieving small screws that have dropped into inaccessible locations.

Blown or sick motors are likely causes of trouble at the racetrack, and even if you have a spare, it could take quite a while to complete the switch. We've installed male battery plugs on all our motors, and female connectors to the output side of all our speed controls. Our spare motors have also had the capacitors installed and have been broken-in. Now, it only takes a couple of minutes to swap a motor, or to change one to see if the car will run better. If you race regularly, you'll eventually need a new motor anyway, so why not get one and keep it as a spare? The old motor may be rebuildable, and you'll be able to use this as your spare when the time comes. Several good motor carriers are available, so there's no excuse for letting this precision instrument roll around in the bottom of your toolbox (especially if it's a metal one!).

The soldering iron is our most important tool. Most problems and DNFs have been caused by wires being yanked off batteries or motors in a crash, or by other repairable electrical malfunctions. An iron that heats up quickly is a big help, and the correct type of solder makes life a lot easier.

The center tray bin on the top row of my toolbox contains a selection of tools that are used frequently, e.g., the Allen wrench for motor pinion setscrews, the wrench for the rear wheels, a small screwdriver for removing E-rings, the open-end wrench for the front steering turnbuckles, and a few other favorites. This ensures that routine changes can be accomplished without digging through a pile of Allen keys or rummaging through the bottom of the toolbox looking for that other wrench. Some of these often-used tools have been duplicated, just to make sure we have one when we need it. As I said before, even the inexpensive stuff will be adequate; it's hard to abuse tools on an R/C car.

Of course, all the tools in the world won't help if your car isn't prepared or if you've left something at home (like the *transmitter*, von Erich?). We've devised a check list that pretty much guarantees that your car is ready to race and that you have all the essential support equipment. The sheet also lets you keep track of lap times and start/finish statistics to monitor your progress. If you're an off-road racer, you could include more details, e.g., suspension setups and tire combinations, so that you can keep track of what works.

With all this, you should be able to arrive at the track ready to race, without having to worry about problems. This alone should make you more competitive, and maybe give you the winning edge!

**Here are the addresses of the manufacturers mentioned in this article:*

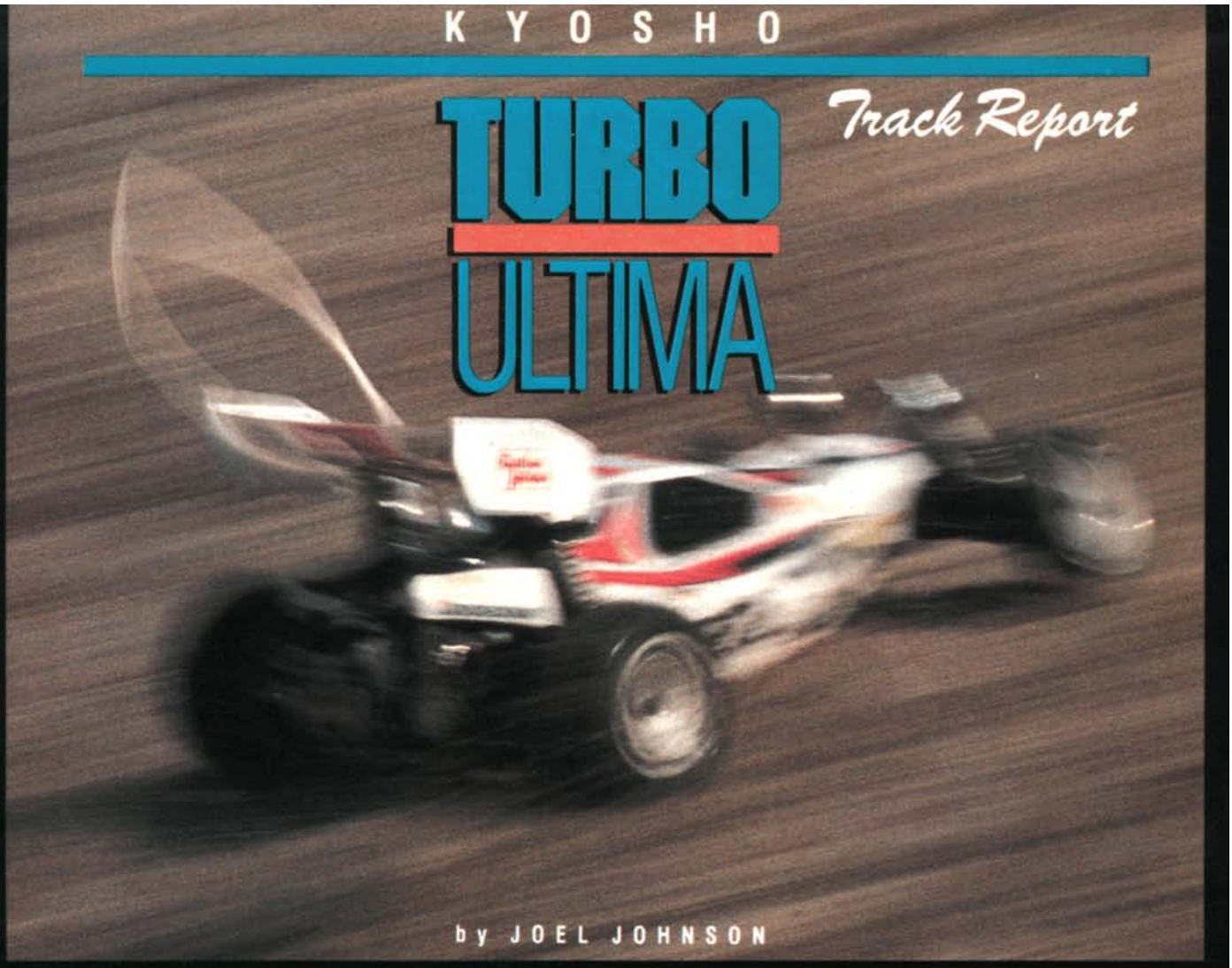
Paragon Racing Products, 8802 Knollwood Dr., Eden Prairie, MN 55344.

Parma International, Inc., 13927 Progress Parkway, North Royalton, OH 44133. ■

KYOSHO

TURBO ULTIMA

Track Report



by JOEL JOHNSON

THE WORLD CHAMPION EXAMINES THE KIT VERSION OF HIS WINNING CAR

KYOSHO'S* ULTIMA is the current IFMAR 2WD World Champion, and now Kyosho has introduced a Turbo Ultima that incorporates world-class upgrades to make this new kit a sure winner on the track.

The new parts that have been included are:

- graphite shock towers and top plate
- platinum shocks
- new, improved, speed control
- anodized special-edition chassis
- ball differential
- ball bearings
- universal joints
- LeMans 240ST motor
- new racing-body design

The Turbo Ultima is logically bagged and boxed to make assembly a breeze. The instructions are very well-written and they're easy to understand, but with all the sketches, you really don't *have* to read anything—but do so anyway!

ASSEMBLY: On starting to assemble the car, I noticed that Kyosho has you assemble the parts in groups, e.g., the

TURBO ULTIMA

KYOSHO

TURBO ULTIMA

Type ..... Off-road 2WD
Scale 1/10
Sug. Retail Price $279.95

DIMENSIONS:
Overall Length ..... 14 inches
Width ..... 9.75 inches
Height ..... 6.5 inches
Wheelbase ..... 10.5 inches
Front Track ..... 7.75 inches
Rear Track ..... 8.25 inches

WEIGHT:
Gross (w/bat.) ..... 54 ounces

BODY:
Type ..... Off-road buggy
Material ..... Polycarbonate

CHASSIS:
Type ..... Open channel
Material ..... Aluminum

DRIVE TRAIN:
Type (prim./sec.) ..... Gear
Differential ..... Ball-type adjustable
Bearing Type ..... Ball bearing

SUSPENSION:
Type (f/r) ..... Lower A-arm; upper link
Dampening (f/r) ..... Oil-filled, coil-over shock

WHEELS:
Front: Type ..... One-piece nylon
Dimensions (DxW) ..... 2x.75 in.
Rear: Type ..... One-piece nylon
Dimensions (DxW) ..... 2x1.375 in.

TIRES:
Front ..... Ribbed, low-profile
Rear ..... Knobby, low-profile

ELECTRICS:
Motor ..... LeMans 240ST
Battery Type Required .. 6-cell flat pack
Speed Controller ..... Rotary mechanical

OPTIONS AS TESTED:
None

COMMENTS:
Kyosho's new rotary speed control is a big improvement over the old spot-welder style. The Turbo Ultima should be in the running to repeat as world champ. The Platinum shocks are disappointing and should be replaced with Kyosho's own Gold shocks.

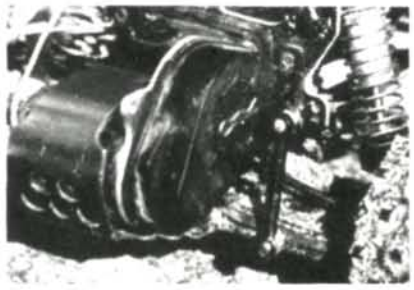
gearbox first, then the rear end, etc. This is a good way to approach building a new car, and I strongly recommend that you follow the directions exactly, but save the shocks until last, because these take the most time. It's also common sense to use Loctite* on any screw that's threaded into aluminum or metal.

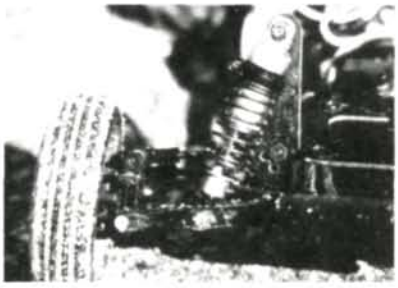
The kit went together very easily, needing only minimum trimming to make parts free. The biggest problem I had was freeing the upper links of the front and rear suspension, but, eventually, they did free up. The gearbox is very easy to put together and, once built, requires just about no maintenance.

Mounting the radio gear was also no problem, even though in most kits, this is the biggest project of all. I used two Futaba* S132Hs and the new Futaba PCM 1024 receiver and transmitter, and the car seemed to have been made to fit this radio gear perfectly. Keep in mind that there are adjustments in the servo mounting that allow a variety of different-size servos to be mounted.

The wiring of the car is very simple, and the instructions are very clear on how to hook up all the electrics. This brings me to a weak point in all out-of-the-box stock cars: the speed control.

In my opinion, the speed control is one of the most important features of a car, and most stock speed controls are very poor and require endless maintenance. To my surprise, the speed control included in this kit is the best step-type speed control that I've seen, and it replaces the old Kyosho spot-welder special. It's operated by a servo, and it has three speeds forward and one in reverse; the contacts are sealed against dirt; and it has been designed with reliability in mind. By no means is this as good as an electronic speed control, but, for a servo-controlled speed control, it's good. After being run a few times, it seems to be holding up very well under normal track conditions. Another good feature is that it has a few different holes for mounting the linkage, so it will be easier to adjust your servo to work with it. This speed control





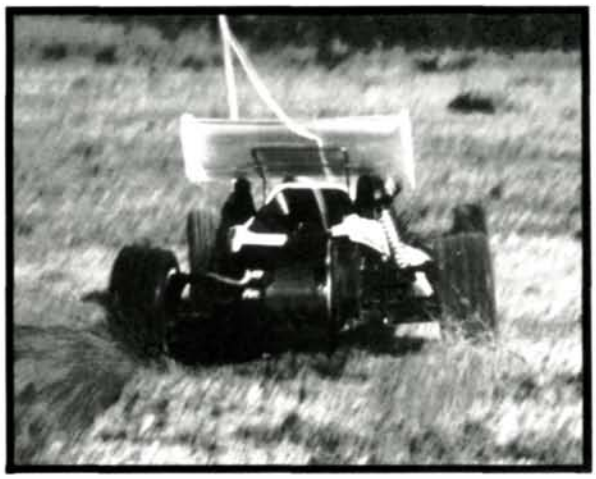
Far Left: *The motor guard and rear anti-roll bar are standard equipment on the Turbo Ultima.*
Left: *Kyosho Platinum shocks are found front and rear on the Turbo Ultima, but Joel says you should switch to the Gold shocks for best performance.*

won't last forever, so be prepared, but it *will* give you hours of enjoyment before it burns out. In case the performance is hindered by dirty contacts, the instructions show you how to clean them.

My only *real* complaint is about the new Platinum shocks. These new shocks are supposed to have adjustable, internal dampening so that the oil doesn't have to be changed to stiffen or lighten the dampening. This was a great idea, but shocks of this size don't have enough oil to accomplish the task successfully. In simple terms: Not everything used in full-size cars can be adapted to model cars. When I assembled the shocks, they bound up and leaked oil, no matter what I did. The shocks will work, but it takes time to get them smooth, and they'll still leak oil. In general, the shocks are probably the weakest point of the kit. It would have been much better if Kyosho had included the Option House Gold shocks; they're less expensive and racers all over the country use them.

PERFORMANCE: When the car was on the track and running, I found it well-balanced and predictable. The tires that come with the kit are good to start out with, but after a few races, try a different front tire. After hitting a few things (on purpose, of course) the chassis was still intact, but, as with all aluminum chassis, it will eventually fatigue and lose its rigidity.

The Turbo Ultima is the best out-of-the-box stock car (with everything but radio and batteries) that I've seen so far. Some other stock cars might have better performance, but they still need a few hundred dollars in electronics. For a beginner, this car is reasonably priced and has everything needed to go racing. Need I say more?



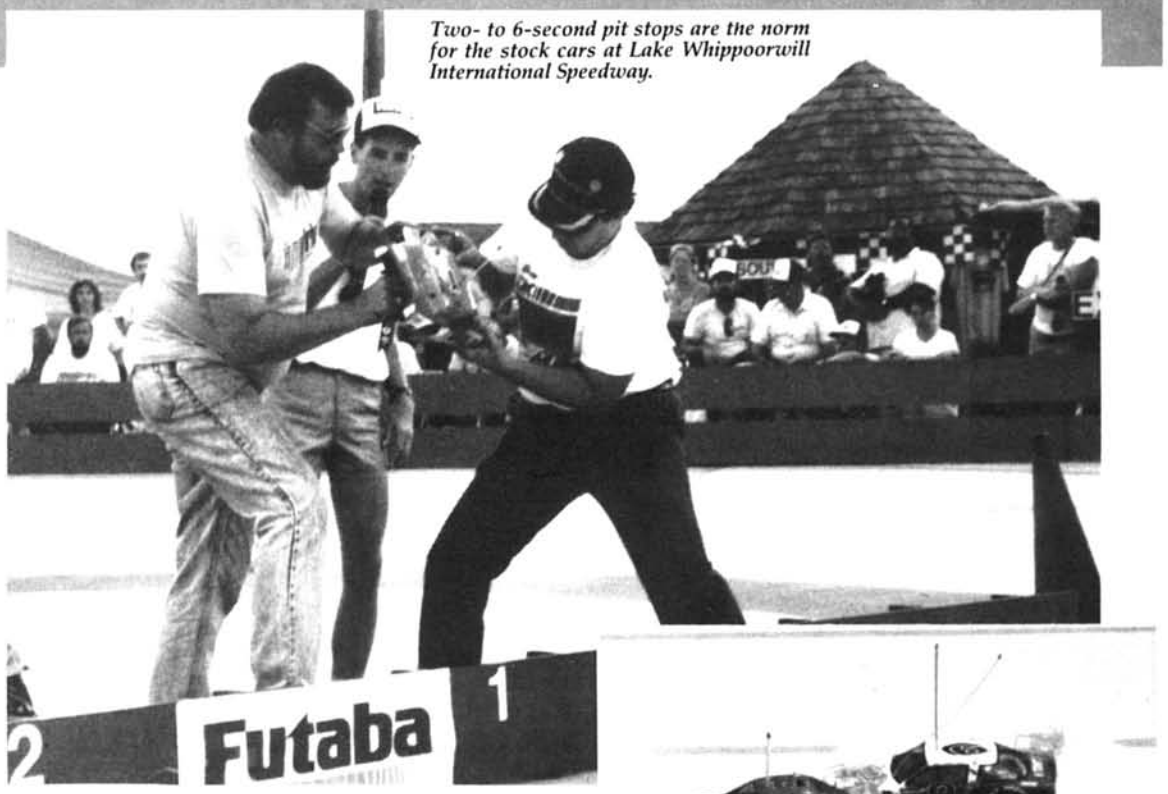
**Here are the addresses of the companies mentioned in this article:*

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.

Loctite Corp., 18731 Cranwood Park, Cleveland, OH 44128.

Futaba Industries, 555 W. Victoria St., Compton, CA 90220. ■

ENDURANCE RACING?



Two- to 6-second pit stops are the norm for the stock cars at Lake Whippoorwill International Speedway.

Quick-change battery packs open the door to longer races.

by RICH HEMSTREET

Wheel-to-wheel 1/10-scale racing for 200 laps doesn't constitute endurance racing.

FULL-SCALE ENDURANCE racing is usually spoken of in terms of once-around-the-clock (e.g., the 12 hours of Sebring) or twice-around-the-clock (e.g., the 24 hours of LeMans). Some faint-hearted production classes call six hours an enduro; at one point in racing history, the Indianapolis 500 was considered an endurance event—not anymore!

So what's considered endurance racing in 1/10-scale on-road racing? If the race is longer than the 4- or 5-minute norm, is it an endurance race? How many battery changes are required for a race to be called an endurance race? Is a 100-lap race classified as an endurance event because a car spent 8 seconds in the pits having two fresh battery packs installed? I don't think so. The same goes for a 200-lap race around Lake Whippoorwill International Speedway, where a car might stop for five battery packs. These races are so short that nothing should wear out on any car, and if something breaks, there's no point in spending 5 minutes on repairs. But at this point in R/C history, the Novak 650 is still an endurance race.

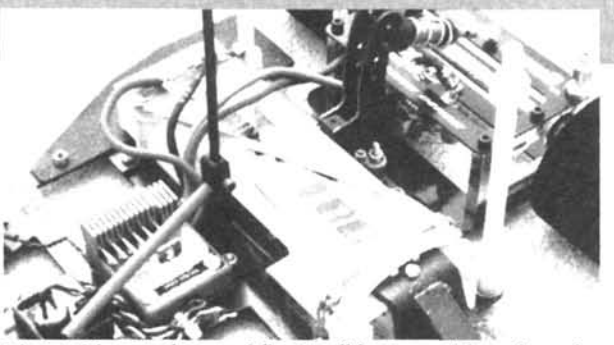
The 650 is nearly 50 miles long, and to win, you have to finish the 650 laps in roughly 1 hour and 15 minutes. The first 600-lap races run at Lake Whippoorwill were very hard on tires, and some competitors had to make pit stops for fresh rubber. Car setups and new tire compounds have made tire changes a thing of the past.

What about repairs? Racers can still greatly improve their finishing positions if their crew is prepared to replace whatever gets broken. Even burned-out motors can be replaced quickly enough to assist a driver to a high finishing position. The Jim Fuller/Joel Johnson team had two motors replaced during the Novak 600 last year and still finished 3rd, and Ralph Burch Jr.'s Hyperdrive car was broken up three times during the Novak 650. His pit crew rebuilt the front end twice and the rear suspension once, but he still managed a 5th-place finish. Only endurance races reward this type of pit work with good finishes, but the chance of gaining a victory after any lengthy repair is very slim. This shows that the Novak 650 is getting close to losing its designation as an endurance race to become simply a 650-lap race.

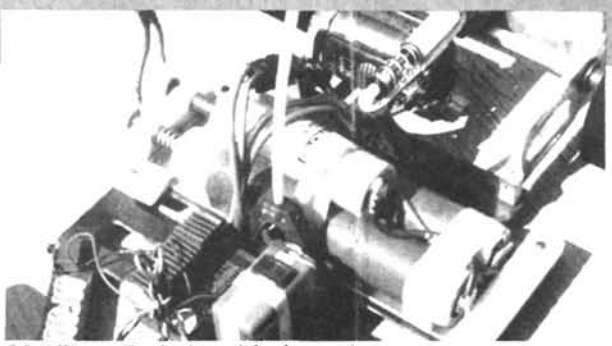
The key to these long races with electric 1/10-scale on-road cars has been the emergence of reliable, quick, battery-change systems. Composite Craft*, BoLINK* and Delta* have all developed saddle-pack quick-change systems. Pre-wired plates attach to pins

(Continued on page 60)

ENDURANCE RACING?

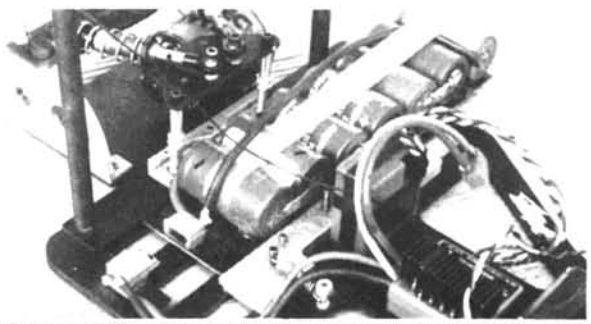


The TRC battery box used flat 7-cell battery sticks to keep the center of gravity as low as possible.



McAllister Racing's quick-change battery system was very reliable.

Nylon hooks hold Cheetah Racing's batteries in place. A spring-loaded button is pushed to release the hooks during pit stops.



The Team Ugly quick-change was used on the BoLINK Eliminator 10s from the Midwest.

on the underside of these cars' chassis. The BoLINK system is available on its new Enduro 10 kit, and McAllister*, TRC* and Cheetah Racing* have all come up with quick-change systems that use stick-style battery packs. All three systems were prototypes that were expected to be put in production, and the stick-style systems can be adapted to many different styles of chassis. That will open up endurance-type events to most makes of cars. For that matter, maybe some of you off-road racers out there are ready to try a scaled-down Baja 1000 race using quick-change battery packs to run 1,000 laps on a rough off-road track. Now, *that* would *truly* be an R/C endurance race!

**Here are the addresses of the companies mentioned in this article:*

Composite Craft, 2400 Sand Lake Rd., Orlando, FL 32809.

BoLINK R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

Delta Manufacturing, 27 Racecar Ct., Lorimar, IA 50149.

McAllister Racing, 2205 First St., #107, Simi Valley, CA 93065.

TRC, P.O. Box 478, Oakboro, NC 28129.

Cheetah Racing, 10823 Amestoy Ave., Granada Hills, CA 91344. ■

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SCALE

STOCK-CAR FINISHING

by ERIC GOLDSCHRAFE

The Piedmont car appears to be ready for the '89 Daytona 500.

Crown Oil decals were hand-cut for this MRP Olds body.

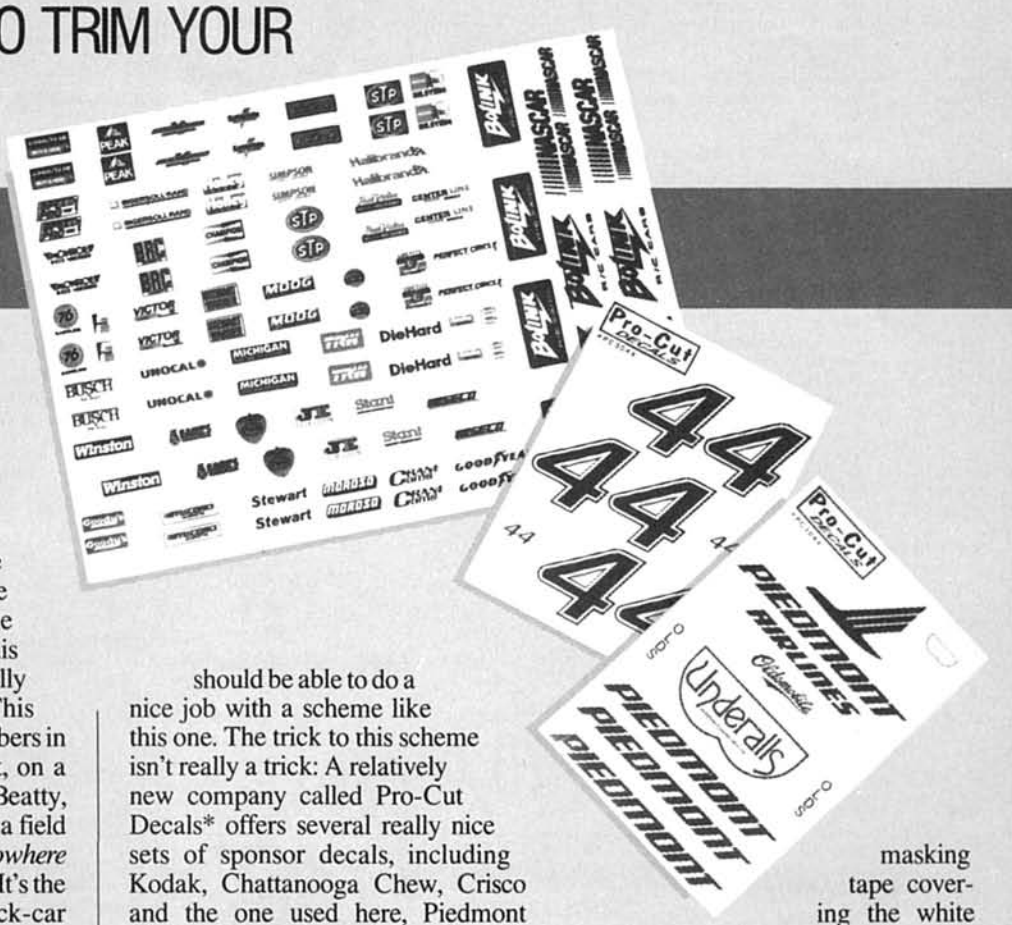
Hardee's sponsorship is duplicated on this Parma Olds with Parma decals.

AS CHEVY, FORD and Pontiac dominated this past Winston Cup season, even devoted fans might forget that Oldsmobiles won a few important races: Lake Speed won at Darlington and Phil Parsons finished first at Talladega. Oldsmobiles driven by Sterling Marlin, Rick Wilson, Speed and Parsons figured in several, strong, top-five finishes in some exciting races. All the major R/C model body manufacturers are including the 1988 Cutlass in their product lineups, and a detailed look at several of them might provide some inspiration for your next project. This article not only discusses the cars, but also includes some painting tips and a few different approaches to decals and finishing. At least one of them should be within your skill level, even if you're a rookie.

Parma*, BoLINK* and MRP* have been manufacturing 1/10-scale Lexan bodies for many years, and all have become well-known for the quality of their products. Each makes an '88 Olds, but, while the quality is there, there are differences between them and also scale errors. (There are other makers producing Olds bodies, too, but they weren't available for this article.) The serious racer is just as interested in aerodynamics and weight as in style and appearance, so comparison is made on these points as well.

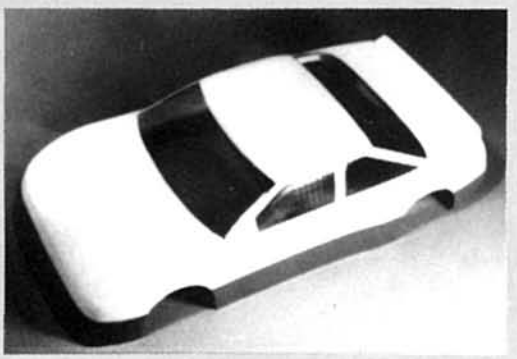
The BoLINK body is probably the best of the three with regard to molded-in details, with the embossed "Oldsmobile" on the front air dam and the fastener detail on the rear spoiler. After trimming and prior to painting, the body weighed 5 ounces, and it should easily fit any on-road chassis. When

THREE WAYS TO TRIM YOUR OLDSMOBILE



comparing it with the others, you'll notice that this body is narrower, shorter and somewhat more streamlined. The roof is quite off-scale, and the rear roof pillars are more like those on the Buick stockers. This may have been done intentionally to improve aerodynamics: This body *does* give some good numbers in the wind tunnel and, no doubt, on a fast track. NASCAR's Dick Beatty, the chief inspector, would have a field day on this car, as it comes *nowhere near* fitting the stock templates. It's the kind of car Smokey Yunick, stock-car racing's rule-bending legend, would try to slip past the tech guys.

Nevertheless, the BoLINK Olds is a nice molding, and I gave it all the attention it deserves. Instead of a complicated scheme and a bunch of hand-made lettering and numbers, I tried a fairly simple paint job and didn't make a single decal; beginners should be able to do a nice job with a scheme like this one. The trick to this scheme isn't really a trick: A relatively new company called Pro-Cut Decals* offers several really nice sets of sponsor decals, including Kodak, Chattanooga Chew, Crisco and the one used here, Piedmont Airlines. Not only are they well-made and in accurate 1/10 scale, but the corresponding numbers are also available—something no one else has done yet. I've tried another set, too, but I'm saving that for another time. You 1/4-scale racers might like to know that these decals are available in this size, too!



A basic two-color paint job can be the base for a Concours winner.

After trimming and preparation, the window areas were masked off with tape. A thin strip of masking tape was applied at the color-separation line around the middle of the body, and the upper section was completely masked off. Be sure you get a good clean line at the meeting point of the colors, as there's no trim stripe to hide a less-than-satisfactory job. The blue was sprayed on with an airbrush using Floquil* paint, Floquil Dio-Sol thinner and a small amount of automotive flex agent. This mixture dries pretty quickly, and the masking tape covering the white portion may be removed almost immediately. Be careful that you don't accidentally remove any window masking; check it to be sure, and replace any missing tape. Floquil white, mixed as before, completed the painting, and after 30 minutes or so, you can remove the window masking and begin the trimming and decal work. For the trim, I like to use Top Flite* MonoKote trim sheet material, as it's easy to use and very durable. Using photos of the full-size car as a guide, all the window areas (except the driver's window) are outlined with strips of black MonoKote, about 5/32-inch wide, cut with a sharp knife and a steel straightedge. Try to use the same body style as you're modeling, as each team has its own way of finishing its racers, i.e., don't use a Monte Carlo body if you're modeling an Oldsmobile.

The windows on the full-size racer

(Continued on page 102)

THE ACUTRAK DASH

Left: *Snuffy Smith of S.S. Industries congratulates Jim Fuller on his win during the Acutrak Dash. Fuller used the Hyperdrive belt conversion.*
Above: *Jim Fuller's Reedy-powered Predator took 1st place in the Invitational Acutrak Dash.*

Joel Gish, who won the Amateur Acutrak Dash, had the fastest car of the night.

Photos by Steve Pond.

TWO-MINUTE SPRINTS AT THE CAR ACTION WEEKEND

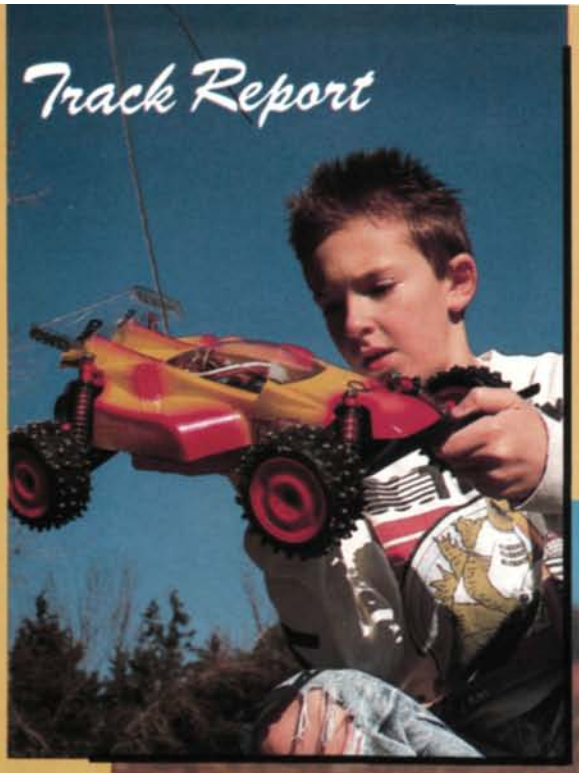
by STEVE POND

DESIRE FOR SPEED is the motive here—just plain old fast-as-you-can-go speed. For decades, drivers have risked and lost life and limb in an effort to be the fastest in the air, on the sea, or on the ground. While we R/Cers have it a little easier because of the considerably smaller risk involved, don't think that the competition is any less fierce.

During this year's Car Action Weekend, the 2-minute dash, which has long been a part of the tradition of Whippoorwill, was sponsored by Acutrak. The "Acutrak Dash" featured the 20 fastest drivers from the previous day's qualifying rounds in both the Invitational and Amateur Classes, so 40 competitors had their eyes on the Tiffany gold ring—Acutrak's reward for the 1st-place finishers. Unlike the past, when the often-faster 1/12-scale cars also competed in the dash, the competition was limited to 1/10-scale cars. While most of the amateurs used saddle-pack chassis with additional cells, the invitational drivers ran the chassis they used in the enduro racing. These chassis had quick-change packs, and most stuck to the 7-cell packs they were already using for the regular racing, instead of going to 8, 9, or 10 cells, as some have tried in the past.

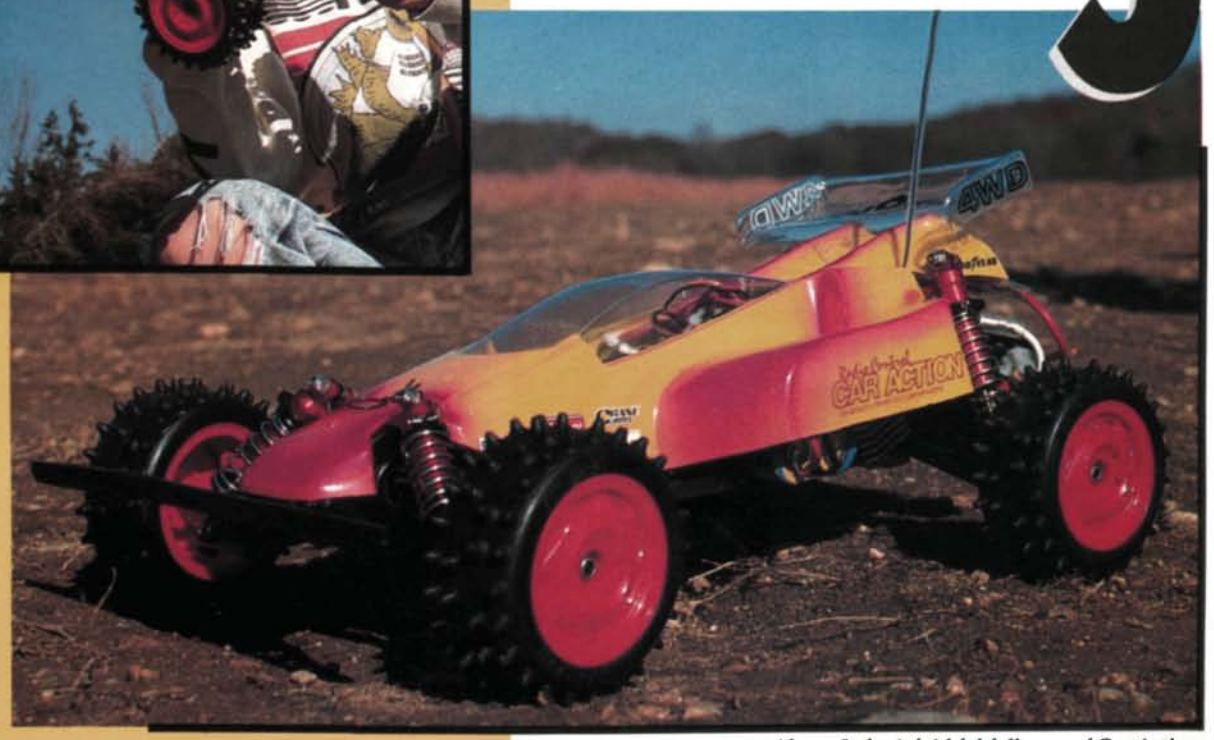
In the Amateur Class, Rick Pruitt, driving his TRC Pro 10 with a Peak Performance motor, took the honors as the third fastest. The second spot went to Gary Kolinski; he covered the 384 feet in a fast time of 5.8 seconds for a total of 20 laps in 2:00.3. Taking 1st place in the Amateur Class (and what eventually turned out to be the fastest run of the entire field) was Joel Gish with a Checkpoint-powered Vicfor machine. Gish ran an 8-cell SCR pack underneath a very low-cut body that seemed to cheat the wind. While his fastest time was only able to match that of Kolinski's and Pruitt's, the rest of his laps were consistently faster, and this enabled him to put 21 laps under his belt in 2:05.1. Gish's motor was a 16-turn with 22 degrees of timing dialed-in, and he ran a 4.80 gear ratio to record the fastest 2-minute run of the night.

For the Invitational Class, the "Little Dude" Chris Doseck came in 3rd with his Trinity-powered TRC Pro 10. Doseck used a 10-wind drag motor that should have been more than powerful enough to propel his car to a record pace, but the best he could muster during his 20-lap run was a 5.9-second lap time. It seems as though his worry about making the 2-minute time limit may have persuaded him to gear a little too conservatively. After a brilliant run, and what promised to be a record-setter by a good margin, Dave Hechler had to settle for 2nd place, as his batteries dumped just before he crossed the finish line for the 21st lap. Hechler also ran a Trinity-powered TRC Pro 10 with an experimental 9-turn motor and a 7-cell SCR pack that was close to exploding because of the awesome heat generated by draining the batteries so fast. (I didn't say there was no risk involved!) Smiling all the way home was Jim Fuller, who piloted his Predator to 1st place in the Dash, with 21 laps in 2:05.6. Fuller prepared his Predator with a 13-turn Reedy Ultra motor and a Hyperdrive belt system that could only round the track with a fast time of 5.8 seconds, but, like Gish, he was able to keep all of his times low enough to come out with the fastest average in his class. Gish really took the spotlight away from the invitational drivers when his 21-lap run beat their best by .5 second. Let's hear it for the amateurs! ■



COBRA INTERNATIONAL'S

SUPER BAJA



Above Left: *A faithful follower of* **Car Action** *gives the Super Baja the once-over. Let's hope the car holds up better than his pair of blue jeans!*

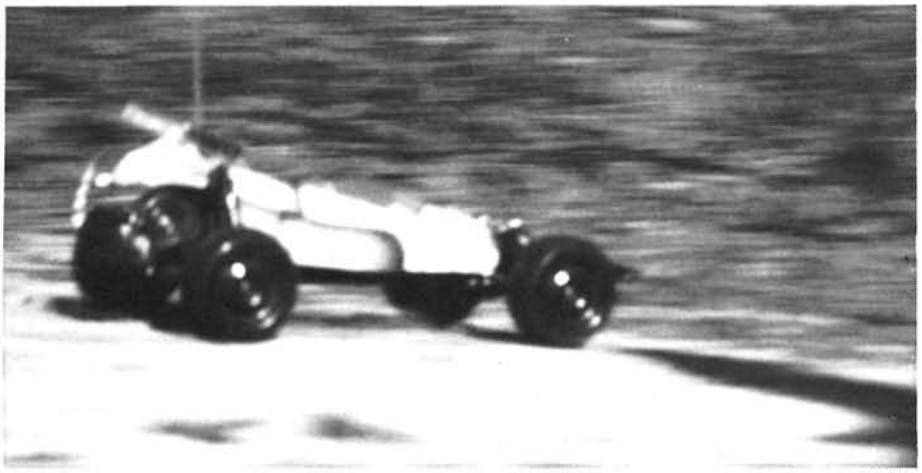
A LOW COST 4WD OFF-ROADER THAT'S ALMOST READY TO RUN

by RYAN FITZ

REMEMBER THE DAYS when the only fully assembled R/C cars you could buy were sold at the local toy store or in Radio Shack? Well, the industry has come a long way since then and a stock assembled R/C car that's equal to any of its competitors may now be a reality. Just install a radio system and run with the best of them for a fraction of the cost of the current world-class contenders. The newest entry into this market is the Super Baja from Cobra International*—a 4WD off-roader using the latest drive-train technology: the belt.

The Super Baja comes completely assembled; you only have to install your chosen radio system and set up the three-step forward, two-step reverse speed control. The car includes an RS-540S with a standard 9-tooth pinion, and it also includes an optional 11-tooth pinion gear. The Super Baja chassis has an aluminum flat-plate design with side guards to help protect the drive train and your radio system. The drive train is belt-driven with planetary differentials front and rear for low-resistance 4WD performance.

Suspension on the Super Baja consists of fully assembled oil-filled aluminum shock absorbers with coil-over springs that are fully adjustable.



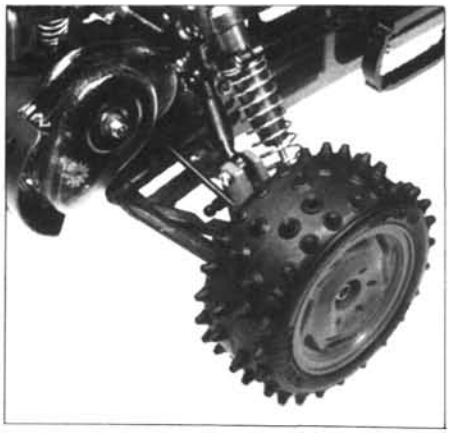
The Super Baja has the potential to be swift, with its belt drive providing a quiet, friction-free power transfer.

On each corner of the independent suspension are a nylon composite A-arm and a fixed upper link that together provides very good handling.

ASEMBLY: Assembly is quick and easy, even for the novice R/C mechanic, and it should take no more than 1 to 1½ hours, using the 8-page assembly manual, of which three pages list replacement and optional parts for your new buggy. The entire package is then topped off with the aerodynamic-looking Lexan body, which is also included but has to be trimmed and painted.

For the track test, a Kyosho* Pulsar 2001 radio system was easily installed using the Super Baja's BEC with switch. All screws and nuts on the car were checked for proper tightness and placement. (This is something I highly recommend for *any* car before you run it, regardless of whether it's a factory-built car or one you built yourself.)

Everything was in order, including proper positioning of the motor pinion gear. But before going to the track, knowing that we'd want the best top-end run from the Super Baja, I decided to change the pinion gear and install the optional 11-tooth gear. While changing the pinion gear, I discovered that I couldn't get the pinion and spur gears properly lined up. After further investigation, I found that the motor-mounting plate needed to be slightly modified to obtain the correct gear mesh. The motor plate has a factory-machined oblong adjustment slot, and, near the end of the slot, there's a hole in which the motor screw is placed if you're using the 9-tooth gear. If you decide to use the 11-tooth gear, you'll have to cut out the piece of the motor plate that's between the oblong slot and the single hole. It's a simple modification, but necessary for obtaining the proper gear mesh when using an 11-tooth pinion.



Super Baja suspension up close shows a coil-over, oil-filled shock and a fixed upper link. After-market replacement of the fixed upper link can be accomplished easily to provide even more adjustability in the suspension.

PERFORMANCE: Now, off to the test track. During the first lap around the track, the Super Baja seemed to have a bad case of understeer, so we went back to the pits to check it. A quick look at the steering revealed that the steering servo, which had been installed with servo tape, had come loose, and the nylon strap that the assembly manual recommends had been left off. With the steering servo secured properly, the steering responded as well as that of any car I've ever driven. Then, about 5 minutes into the test run, with the Super Baja performing at a remarkable speed, the car made a horrifying sound—a high-pitched scream that continued even when the car sat motionless on the front stretch. This is a sound that no one wants to hear; our day was over and our investigations began.

COBRA
SUPER BAJA

Type ..... Assembled 4WD buggy
Scale 1/10
Sug. Retail Price $159

DIMENSIONS:
Overall Length ..... 15¾ inches
Width ..... 9½ inches
Wheelbase ..... 10⅝ inches
Front Track ..... 9¼ inches
Rear Track ..... 9⅜ inches

WEIGHT:
Gross (w/bat.) ..... 3 pounds, 12 ounces

BODY:
Type ..... Full canopy off-road
Material ..... Lexan

CHASSIS:
Type ..... Flat plate with side guards
Material ..... Aluminum

DRIVE TRAIN:
Type (prim./sec.) ..... Belt
Differential(s) ..... Planetary gear
Bearing Type ..... Plastic bushings

SUSPENSION:
Type (f/r) ..... A-arm
Dampening (f/r) ..... Coil-over shocks

WHEELS:
Type (f/r) ..... One-piece plastic
Dimensions (f/r) (DxW) ..... 2x1.25 in.

TIRES:
Front ..... Pin-spike
Rear ..... Pin-spike

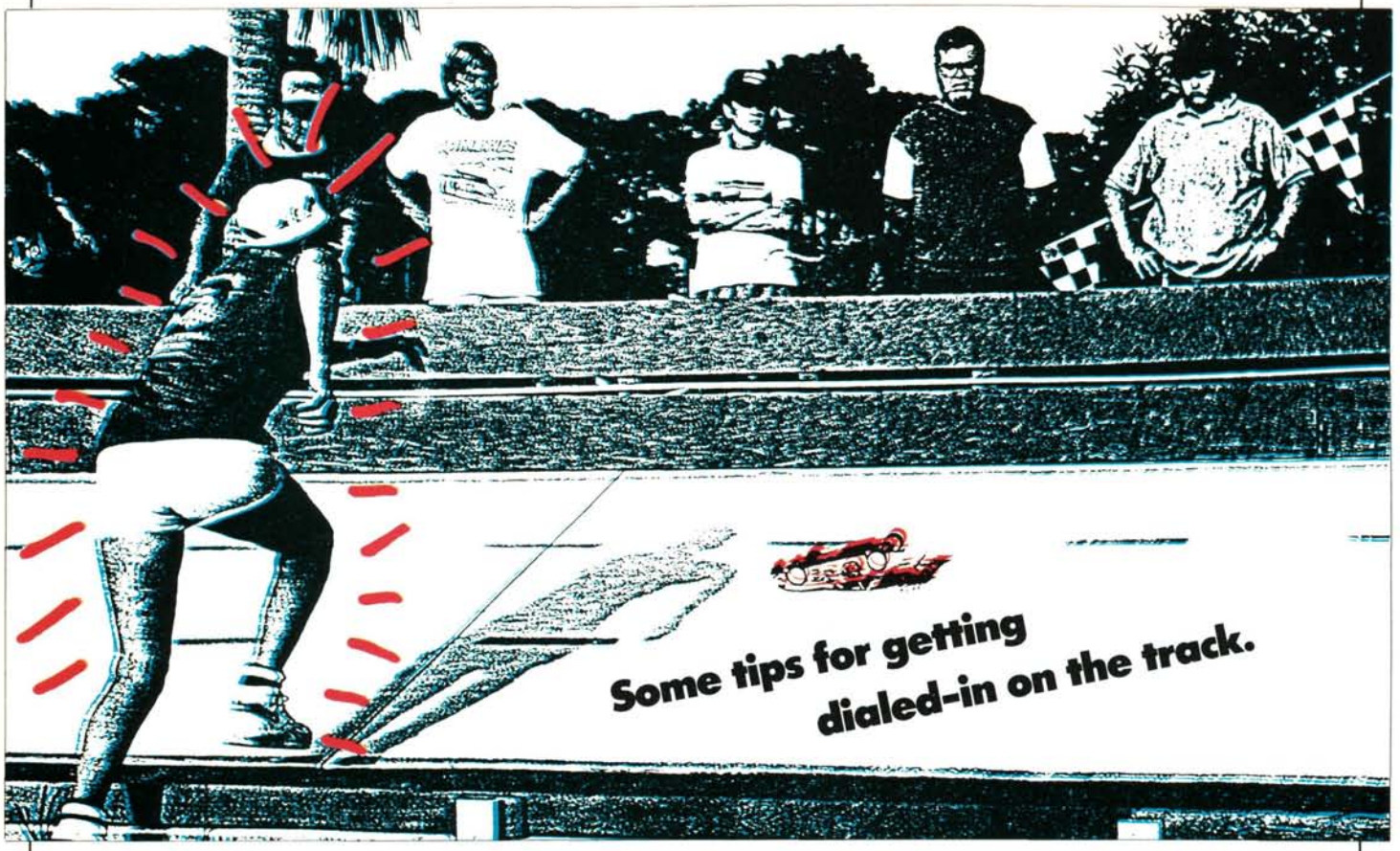
ELECTRICS:
Motor RS-540S
Battery Type Required ..... 7.2V to 8.4V
Speed Controller ..... 3-step plate

OPTIONS AS TESTED:
Pulsar 2001 radio system.

COMMENTS:
With assurances that the initial transmission problems of the Super Baja have been resolved, this is the first assembled off-roader with competition potential. Bearings on the wheel hubs and an electronic speed control are highly recommended.

Back on the workbench, the Super Baja was disassembled. Now we could really see the good planning that went into the design of this car—a design that looked similar to that of another big name in the R/C industry. With the rear gearbox now exposed, we saw the cause of our problem. The last pinion gear

(Continued on page 130)



SUPERSPEEDWAY SET-UP

by RICH HEMSTREET

THE SPEEDS RUN at Lake Whippoorwill International Speedway demand a totally comprehensive approach to setting up your race car, or you could dial yourself *out* of any chance of winning *before* you leave for the track! Simply showing up with the wrong body can ensure that you *won't* leave with a trophy.

Let's start with bodies. The '83, '88 and '89 T-Birds, the '88 Pontiacs, '88 Olds and the McAllister* and MRP* Buicks all seem to work well, as do all the Monte Carlos. The '86 Buick and '87 T-Bird (both by BoLINK*) and the '88 Buick by Parma* are all too swoop-nosed. At speed, the angled noses of these cars cause too much downforce on the front tires, and this can cause severe oversteer. Sometimes, this can be overcome with a large wing at a steep angle of attack, but this is counterproductive. If possible, try at least two different body styles at the track. To force the air over the top of the car, the car body should be mounted so that there's very little clearance between the front air dam and the track surface. Also, the wheel wells shouldn't be cut out any more than necessary, since they help to cut down on air turbulence along the sides of the car.

For the Car Action Weekend at Lake Whippoorwill, it was legal to cut out *most* of the rear body panel, except for two taillights. Take advantage of this *whenever* it's permitted!

Clear wings are also allowed on the superspeedway stock cars. From personal experience, I can tell you two things about wings. First, be sure you *have* one on your car. Second, make sure it will *stay* on the car, even after hitting a dot at more than 35mph. After my wing had been removed during high-speed flips, I proved to myself that you *must* have a wing to get around the track. Drivers running PRC's* PR7 usually run spoilers instead of wings, but all the T-bar cars needed wings. Both bi-level and regular wings were run; the important thing is to get the wing properly adjusted for the handling characteristics of your car body and chassis.

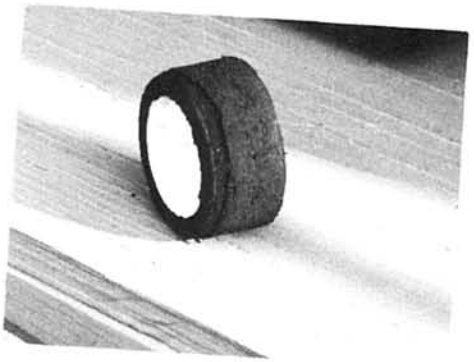
In the chassis department, most drivers used stiffer springs on the front suspension in an attempt to reduce any tendency to oversteer. Some drivers went as far as replacing the front springs with solid spacers. Most racers

(Continued on page 74)

This pit stop was delayed while the crew reattached the rear wing.

Tim Morton is making another low-profile tire for his TRC racing team to use on the high banks.

Left: *BoLINK's new tire had a rubber band glued to the foam core.*
Right: *Even after part of the racing rubber wore off the foam core, this tire worked very well.*



used identical springs on both sides of the front end, but I spoke to one driver whose car had understeering problems when there were solid spacers on both sides of the car, so he installed a spring on the right front, and *that* dialed-in the car.

At the rear of these on-road cars, there weren't many changes from the stock setups. While sway-bars are usually seen at roadcourse events, I didn't see many at the Car Action Weekend. The key to getting the rear ends glued to the track seemed to be the wings.

Most of the tires used by racers at Lake Whippoorwill were BoLINK blues and greens and TRC* greens. Delta* golds and silvers were also used, and the Delta golds showed very little wear and stuck very well. Rick Jordan, from BoLINK, had a few sets of rubber racing slicks that were made of full-size racing tire rubber, and they heat up just like they do on full-size race cars! Jordan could run 5 minutes on these tires to heat them up, pull into the pits for a quick battery change, *remove* his rear wing, and go back on the track with the car hooked up. These tires gave so much traction that the car didn't need the wing after they were heated up!

One route to success at Lake Whippoorwill is to run low-profile tires. These help to keep the center of gravity low and, unlike taller tires, they don't have a tendency to squirm through the high-banked turns.

Most superspeedway racers don't worry about drastically offsetting their weight. While the seventh cell of the battery packs always seemed to end up on the left side of the car, nobody went to the extremes seen in dirt-track oval racing, where all seven cells hang out on the left side of the chassis. The size of the track, with the large-radius banked curves, eliminates the need for extreme offsets.

One final area of superspeedway set-up involves preparing for long races; a 650-lap race obviously takes more preparation. One top driver I talked to goes beyond checking that every nut is tight: Before the race, he superglues *everything* into place. The body-mounting nuts are glued to the posts, the wing is glued into place—even the diff nut is glued to the axle. While this isn't necessary for each 5-minute heat at your local track, it's a good thing to remember when you're going for an important victory.

If you get a chance to race on one of the many superspeedways that are popping up across the country, this article should help you to get dialed-in. Maybe you can join *RCCA* next fall for our Third Annual Car Action Weekend, and try *your* hand at superspeedway racing!

**Here are the addresses of the manufacturers mentioned in this article:*

McAllister Racing, 2205 First St., #107, Simi Valley, CA 93065.

Model Racing Products, 18676 142 Ave. NE, Woodinville, WA 98072.

BoLINK R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245.

Parma International, 13927 Progress Parkway, N. Royalton, OH 44133.

Precision Race Cars, P.O. Box 2544, Titusville, FL 32781.

TRC, P.O. Box 478, Oakboro, NC 28129.

Delta Mfg., 27 Racecar Ct., Lorimar, IA 50149. ■

The Pole Position

by RICH HEMSTREET

Top: *Quarter-scale cars are large enough to give good visibility to sponsors' logos.*
Upper Right: *Two-wheel drive 1/8-scale cars, such as this Associated RC 500, may become the top class for a new national series.*

WHAT'S ON THE horizon for on-road R/C racing? In recent weeks, I've talked to several people who have big plans for the not-so-distant future. If any of these plans work out, they will give a real boost to the whole R/C industry.

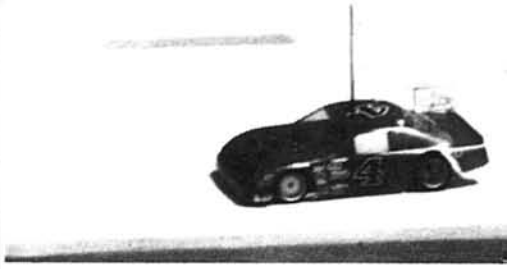
For 1/10-scale electric on-road racing, 1989 should bring a five- to eight-race national superspeedway series. While the first season will probably continue the racing-for-trophies status, by 1990, the organizers hope to pay cash to the winners. There have been discussions about the viability of involving large, non-R/C corporations in the sponsorship of this series. While I'm not at liberty to reveal any names, I *can* say that both automotive and fast-food companies have been approached. This group has also discussed how best to approach the television industry for coverage. There will surely be growing pains, but this organization is trying to bring professionalism to 1/10-scale racing.

Another contact told me about plans to develop a 1/8-scale national series that would involve both roadcourses and ovals. Once again, negotiations have involved a major corporation, outside the R/C industry. With a possible six-figure budget over two or three years, this series would also go beyond trophies and plaques. I'm also under the impression that to keep some of the competitors' costs down, there will be no 4WD classes. USAC wasn't afraid to keep 4WD cars away from the Indy car circuit; too bad ROAR and IFMAR find it so hard to say "No" to the manufacturing technology that drives up costs.

A healthy 1/8-scale class would certainly give a lot of 1/10-scale racers somewhere to move up to.

My third contact is looking at a tie-in for the new 1/4-scale Indy cars with one or more of the full-scale CART races. While it's hard to tell at this early stage whether corporate sponsorship is available or not, there would certainly be lots of exposure. Quarter-scale drivers could take that exposure to the bank by aggressively making their own sponsorship deals. While that might not work for a single race deal, participation in a series should be easy to sell.

It's interesting that none of these promoters has expressed any interest in off-road racing. Perhaps I'm a purist, but oval-track and on-road racing do seem to emphasize skill more than off-road whoop-de-do driving does. Besides, spectators don't usually like clouds of dust!



A five- to eight-race series is planned for 1/10-scale electric racing next summer.

Finally, I've also heard a report that a major oil company is considering hiring an R/C driver to travel the country and race for it. His R/C car and full-size company-supplied van would be decked out in the company's colors and logo. Even though I'm not sure this deal will go through, I do have a resumé ready. You can form a line to the right, behind me!

Let me know if you hear about any other major sponsorships or series starting up around the country. Until next time, try to keep it shiny side up. ■

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COMPETITION UPDATE

Ralph Burch Jr. rockets to the winner's circle with a hyperdrive powered car and a **CHEETAH RACING *DIFF. CENTERING KIT*** at the 1988 Whippoorwill Invitational Bolink Clash Main Event.

Four time World Champion Tony Neisinger, Tyree Phillips and Rick Howart win 1st, 2nd and 3rd, respectively at the 1988 Region 6, 1/10 Scale Championship Modified 'A Main' Event using **CHEETAH RACING *'BLASTER PLUS'*** bearing cleaning tool, ***DIFF. CENTERING KIT*** and ***SUPER DIFF. LUBE.***

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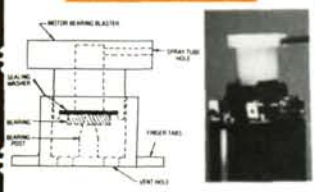

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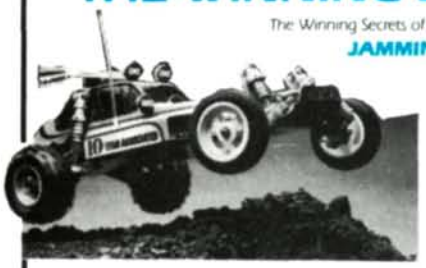

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Associated Electric's ROGER CURTIS explains the RC-10's winning design and the inside story on how to set-up your suspension!

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ACTION WEEKEND

(Continued from page 41)

Vindedahl piloted his car to a TQ mark of 47 laps, while Gish, only 1 second behind, sewed up the second slot. Third-fastest qualifier was John Robinson.

Bartos was the top qualifier in the 1/12-scale Invitational Class. His CAM-powered TRC Pro 12 covered 48 laps in 5:03, and Clausen drove his Associated 12L 48 laps, finishing just 2.5 seconds behind Bartos. This gave Clausen the outside of the front row for his Reedy-powered machine. Hechler was third fastest with his Trinity-powered TRC Pro 12, and Fuller drove a Reedy-powered 12L to the fourth starting position.

Next up in the chain of events was the Acutrak Dash, sponsored by the Marshal Browning Co., manufacturer of the Acutrak Speed Chronometer that was so instrumental in helping all the drivers to fine-tune their cars for maximum performance. The 2-minute Dash featured the top 20 qualifiers from both Invitational and Amateur Classes in an all-out run to be the fastest car on the speedway. First to run were the top amateurs and, despite their lack of factory backing, they turned in some of the most impressive runs. The amateur drivers experimented by adding cells to their 7-cell packs, and this provided some wild thrills and spills.

Finishing 3rd was Rick Pruitt, with a fast lap of 5.9 seconds and a total of 20 laps; 2nd-place honors in the Amateur Class went to Gary Kolinski, with a fast lap of 5.8 seconds at roughly 40mph for a total of 20 laps. Taking top honors was Joel Gish, TQ for the amateur Race of Champions, with a fast lap of 5.8 seconds. Gish was able to nip the start/finish line at the buzzer for an additional lap, bringing him to 21 for the win.

The invitational drivers were up next, and most opted to stick with 7-cell packs and go with hotter winds and taller gears. Coming in 3rd was Doseck, with his Trinity-powered TRC Pro 10. While Doseck was able to turn very consistent times, his average speed wasn't fast enough to take the gold. Second spot went to another Trinity-powered car, this one piloted by Dave Hechler. Hechler was turning in an impressive run with a fast lap of 5.6 seconds, but in the final laps, the motor proved to be too much for the fresh SCR pack, and it dumped rounding the final turn, sending him into the wall with a total of 20 laps in 1:55.1. Jim Fuller, with his Hyperdriven Predator, took top honors in the Invitational Class with a fast lap of only 5.8 seconds

(Continued on page 84)

PONY EXPRESS

Inspired by the full-scale Pony Express monster truck, Fred Beaver built this R/C version.

MONSTER MUSTANG IN SEARCH OF CHEVYS TO CRUSH

by FRED L. BEAVER

The legendary Pony Express riders never had a mount like this to haul the mail.

IN THE 18 MONTHS and 21 days between April 3, 1860 and October 24, 1861, a band of brave men on fleet-footed horses faced perilous conditions to carry 34,753 pieces of mail between St. Joseph, MO, and Sacramento, CA. They were, of course, the legendary Pony Express.

Today, the 7½-ton Pony Express monster truck owned by Tony Bryant of Avalon Beach, FL, is, itself, legendary with its 1967 Mustang fastback body on a 3x8-inch steel frame, 5-ton military springs and huge, car-crushing tires. Seeing it in action recently inspired me to make my own Pony Express. My car started with the MRC/Tamiya* Midnight Pumpkin monster truck kit and uses a 1966 Mustang fastback body painted black with gold stripes. This is the color scheme used on most of the 1966 Shelby GT-350Hs you could rent from Hertz a couple of decades ago.

My goal was to come up with the wildest, wooliest, bucking bronco I could build, and I think I've succeeded. This is one trick pony that will rear up on its hind legs and give you the ride of your life!

PONY EXPRESS

If you want to construct your own Pony Express Crusher, it makes no difference whether you start out with a Lunch Box or a Midnight Pumpkin, as both kits have the same chassis. The Gold Power 8.4V flat-pack battery has seven Sanyo cells and puts out a really powerful punch, and, although it's tight, it *will* fit into the

battery holder. The adapter allows it to be used with speed controllers that have a 7.2V connector. The gold Monster Beetle rims add some flash. They're quite a bit narrower than the stock rims, but the stock tires will work well if you glue them on with Zap CA from Pacer Tech*. The backs of the rims aren't gold-plated, so you may want to spray-paint them with glossy black or flat black—whichever you prefer. This requires taping the many holes in the rim to avoid overspray, but the improvement in appearance is definitely worth it.

The Hobbico* Duratrax ball-bearing set I used consists of one 5x8 and nine 5x11 bearings. Ball bearings are a must for maximum performance and durability in any kit you build.

Fitting the Kyosho* Option House Gold short shocks requires using the six spring mounts you'll find in the pressed parts bag. Cut 1/16 inch off the top of the Rocket City Specialties* heavy-duty ball links, and use one on the bottom of each shock to extend its length. Use a red "damper-fixing collar" (included with the shocks) on the top spring mounts to prevent side-to-side movement. The medium "M-type" pistons with the Gold springs and Associated Electrics'* 20WT shock oil should be enough for most situations.

Twister Motors'* 2WD motor is a 19-turn hand-wound that's already broken-in and has wet magnets, ball bearings, diamond-trued commutator and heat-sink end bell; its wide power band makes it one of the best choices around for monster trucks. Twister motors have been winning major monster truck races on the West Coast all summer.

Miracle Speedway Racing Products (MSRP*) produces several items that improved the Pony's handling and reliability. All MSRP's products are extensively tested at the Miracle Speedway racetrack on customer's cars, and they're constantly being improved. MSRP's bulletproof differential kit contains specially sized hardened-steel axle shims and ball bearings for the gearbox counter gear. The DuraTrax ball-bearing set already has these bearings, but you'll eventually need extras as replacements. With the kind of horsepower you'll be running, the axle shims are definitely needed; they reduce axle-end play and keep gear lash, wobble and crawling to a minimum. An upgrade to this kit will include shims of different thicknesses to allow for a greater range of adjustment. (The shims themselves will soon be offered in a separate kit.) The A-arm steering kit removes the play in the front end for more precise steering and handling. It contains four bushings that fit onto the end of the A-arms, but you'll have to trim the chassis mounts with an X-Acto knife.

The MSRP gear-case strengthening kit employs a stainless-steel rod with a brass collar that's attached to the bottom of the

FULL-SIZE PONY EXPRESS

THIS R/C PROJECT was inspired by Tom Bryant's full-size Pony Express. Bryant built the frame for his monster truck of 3x8-inch steel stock, and a 1967 Mustang body was installed high above the huge tires.

The big-block Ford 460 was bored out to 528 cubic inches. Twin 660 Holley carbs, mounted on a tunnel ram intake, produce roughly 700hp, and an on-board nitrous-oxide system can instantly add 300 more horses to help the Pony clear any obstacle.

The full-size Pony Express weighs in at a hefty 7½ tons, and 5-ton military springs prevent it from scraping its bottom as it crushes Camaros.

Bryant estimates that he has $50,000 invested in his monster—about *half* the cost of many other monster trucks! R/C monster trucks are certainly *a lot* easier on the wallet! ■

case with hardened-steel balls and heavy-duty nylon ball caps. This is important to have when running a high-performance motor, as the tremendous torque it generates can crack the case. This piece also protects the case during all the jumps and bumps these cars face. In the near future, the collar over the steel rod will be made of aluminum to save weight, and two washers will be provided to screw down the steel balls for extra support.

The heavy-duty steering kit contains hardened-steel balls and nylon ball caps with stainless-steel steering rods. The stock ball caps have a tendency to pop off easily, and the too-small stock steering rods are easily bent.

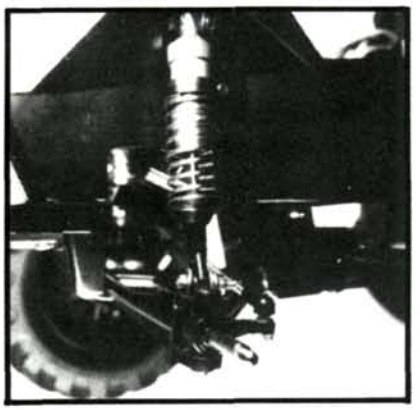
Kimbrough Products'* servo saver has adapters to fit Futaba*, KO* and Airtronics* servos. Its large size is just right for monster trucks, and it's much more precise and reliable than the three-piece stock unit.

The nice paint job on the 1/12-scale BoLINK* Mustang body was done by Andy Lowery of RC Hobbies in Huntsville, AL. He used Pactra* Outlaw Black for the main body color and Grand Prix Gold for the LeMans stripes. For a realistic look, thin foil simulates the chrome on the bumpers and the window moldings. Andy's other neat detailing trick is the foil placed behind the red tail-lights to make them look reflective.

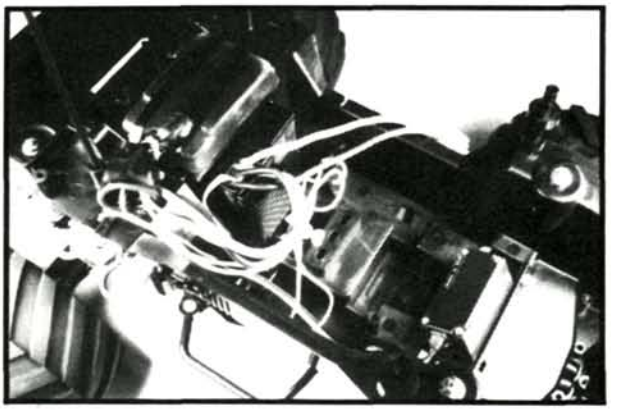
The front Parma* body mounts were located in the same place as the front stock mounting posts, while the rear posts were located in the very rear corners of the chassis. The front posts were cut to 1¼ inches, and the rear posts were cut to 1½ inches.

To continue the black-and-gold motif, everything white was dyed black with Dy-Lon nylon dye from Litespeed*. (This includes the body-mounting hardware, the ball caps, the steering uprights and the servo saver.) Since we wanted the darkest black possible, the dye was used double strength, and the clear antenna tube was painted flat black with a paint marker and capped off with a black antenna tip. The black snap pins included in the kit for the body-mounting posts were substituted for the Parma ones. The aluminum wheelie bar was anodized black, but unless you know someone in the metal-plating business, this can be rather expensive. Instead, you may want to just give it a chrome-like

(Continued on page 134)



Miracle Speedway's heavy-duty steering kit and short Kyosho Gold shocks produce a bulletproof front end.



Futaba's MC112B speed controller fit easily inside the Pony Express chassis tub.

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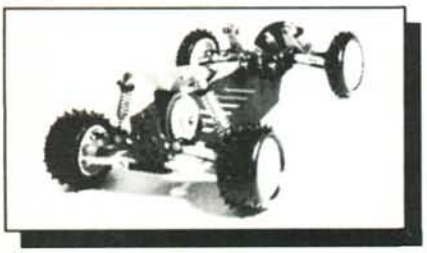

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ACTION WEEKEND

(Continued from page 78)

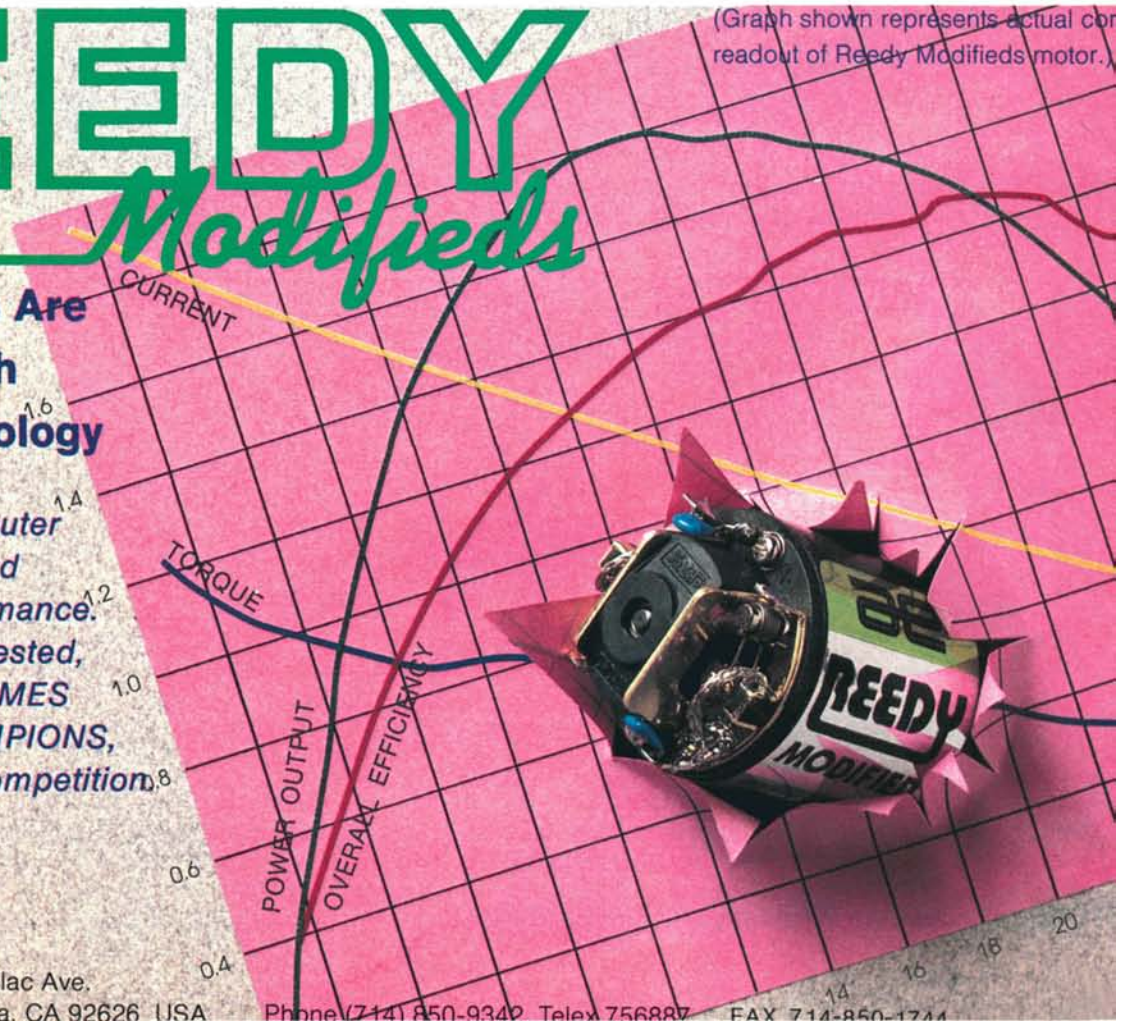
but, just as Gish had done, he was able to beat the clock to the line for an additional lap that brought him to 21. Surprisingly, none of the invitational drivers was able to beat Gish's mark of 21 laps in 2:05.1. Fuller was the only invitational driver to match the 21 laps, but he fell shy of the mark by 5/10 second.

Starting the final day of racing was the McAllister Concours, during which racers were able to show their creative side with some of the hottest-looking stock cars ever to hit the high banks. Two categories—Best Paint and True Concours—were judged, and the participants didn't make it easy on the judges, as there were so many sparkling cars. Third for Best Paint went to Dan Toll, with the Starkist Tuna Ford; 2nd was Bob Urban with a very clear paint job on his Pontiac (six different colors with anodized wheels to match the paint). First was Ari Myers, with the Florida State Lottery machine that would also have been a contender for Concours, if there was a *full-size* car like it! Toll also took 3rd in Concours judging with his No. 31 Slender You Oldsmobile, and 2nd place went to Joe Goodwin for

(Continued on page 90)

REEDY *Modifieds*

(Graph shown represents actual co
readout of Reedy Modifieds motor.)



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TRACK DESIGN

GO AHEAD, DESIGN YOUR OWN TRACK!

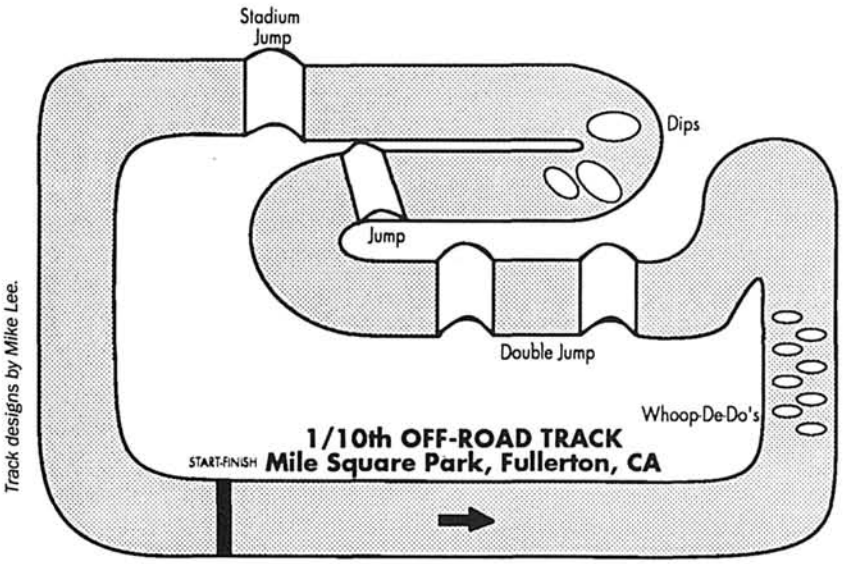
by MIKE LEE

WE'VE RECEIVED many letters asking us how to design a track. Some of those who wrote to us were thinking of building small tracks that would fit in their back yards; others were planning full-size professional layouts in association with hobby shops. Here are a few basic ideas to keep in mind when designing your track.

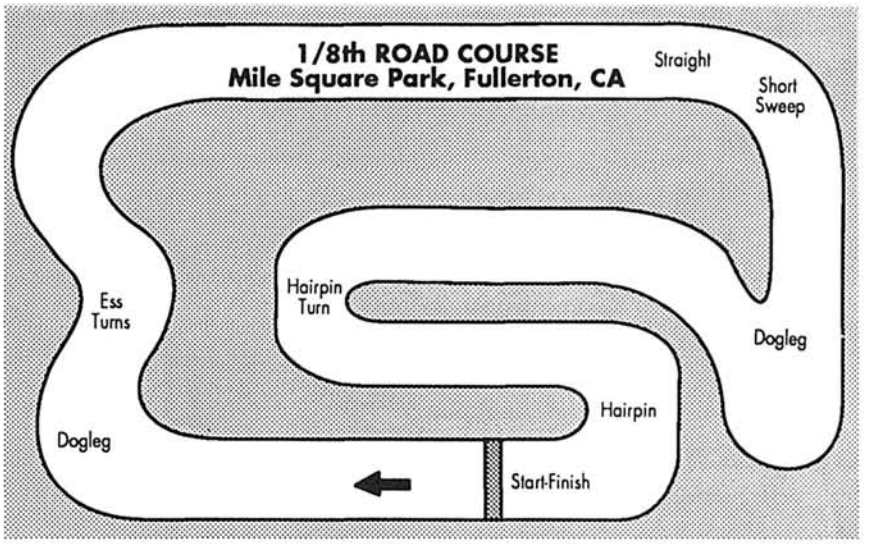
First, you want a track that will be fair for all competitors—not just for you and those who helped out, but for those who'll be challenging you on this track, too. If you make a track that can be handled effectively only by your car, there really won't be much competition, because everyone else will find another track. Keep the design good for *everyone.*

Now, keeping it good for everyone means a couple of things:

- First, the track should be wide enough to allow one car to pass another safely without having to nerf every other car in the process. It shouldn't turn into a demolition derby! Unless you want the corners to slow the traffic, make the track wide in the corners. Straights should be wide enough for cars to make easy passes and still allow slow cars a lane to use without pulling off. Also, the track shouldn't have obstacles that overwhelm the cars as they try to negotiate them. Having a stadium jump is great, but not if the jump damages every car that hits it.
- Second, keep the track open enough for your track marshals to get to the sidelined cars. When there are many berms separating the lanes, it will be difficult for track marshals to jump over them to retrieve cars. Most of the time, they'll have to step on the track and so risk being hit by the other cars. Give the marshals room to run; it will make for faster racing.



Off-road tracks usually have a wide variety of obstacles for which racers have to set up.



While there aren't any jumps on a paved roadcourse, there are still many distinguishing characteristics.

- Third, make the track safe—safe for drivers, safe for cars, and safe for spectators. I'll discuss each of these:

The drivers: These need a place to stand and drive—preferably, an elevated drivers' stand. From this, drivers should be able to look down on the track, and with this improved view, they'll race better. The stand must be *strong enough* to support all the drivers; the *last* thing you need is a bunch of drivers falling off a collapsing stand. And don't forget to provide an access ramp for drivers in wheelchairs; a little thought here goes a long way.

The cars: As previously mentioned,

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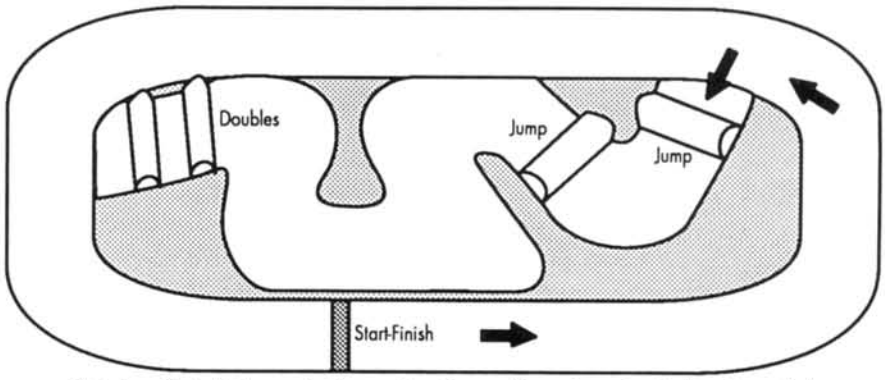

This is a flat, high-speed, dirt oval with an off-road track winding through the infield.

any obstacles shouldn't be destructive. Consider the obstacles the track itself presents. Dirt tracks should have berms that keep the cars on the track without causing them to bust a bumper. Road tracks should have barriers that give way a little to absorb some of the impact and stop cars without damaging them. Watch out for those things that aren't on the track itself, but may be adjacent to it. I've seen a dirt car have its rear axles ripped off by a protruding sprinkler head. Obstacles like this should be either removed or padded to prevent damage to cars.

The spectators: Racing attracts people who love to watch as much as we love to drive, and these spectators should be protected from injury. The aluminum front end of an RC10 could break a person's leg. Make sure that your track is surrounded by a strong barrier—one that's high enough to contain any airborne car.

Above all, a track should be fun, so avoid making too many rules of the road. The track and the operating rules should be such that everyone has an opportunity to expand his driving skills, the chance to win fairly, and the chance to enjoy himself with friends. This makes for a great track that people love to come to.

Now I'll describe some track hazards.

Hairpin Turn: A very sharp turn that makes an almost 180-degree change in direction, and is usually used to slow traffic and cause it to string out.

Dogleg Turn: A fairly wide turn of greater than 90 degrees that's used to string out traffic.

S-Turn: A turn or series of turns that change rapidly from left to right or vice versa; they break up a straight stretch and string out traffic.

Chicane: A series of at least two turns in opposite directions (each of about 90 degrees); it's used to slow down traffic without changing the general direction of travel.

Sweeper: A very wide, gradual, high-speed turn that's usually found on faster parts of a track, e.g., the end of a straight. It can be banked slightly for even higher speed, and is used to change direction and to string out traffic.

Whoop-De-Do: A series of small, uneven bumps that can't be cleared in a single jump. Cars usually bounce several times while negotiating these, and they're used to slow down traffic.

Doubles: Two jumps placed closely together on the same stretch of track; they challenge the cars' power and handling.

Triples: Three jumps in close proximity to one another. Most cars will negotiate two, but only the most powerful will clear all three. They separate powerful cars from weaker cars and allow the faster cars an easy break from the slower traffic.

Stadium Jump: A rather high jump that causes cars to become airborne for relatively long distances. This allows powerful cars to easily pass slower, less powerful cars (also tests your suspension!).

Dip: A depression in the track. This doesn't necessarily cause cars to become airborne on exit.

Irritators: Small berms that protrude from the sides of the track and prevent "favorite" lines from being taken easily.

Banked Turn: A turn of any degree where the outer lanes are raised above the inner portion of the track, so allowing high-speed travel. It separates slower traffic from faster traffic.

Line: A trail on the track that's the fastest course through the obstacle.

Launch: A trail on the track that's the fastest way off the track and into oblivion (usually associated with the word "crash!").

I thank Andy Joltes of Moundsville, WV, for his help and inspiration. Let me know about any ideas on track designs and obstacles you have—and above all, have fun! ■

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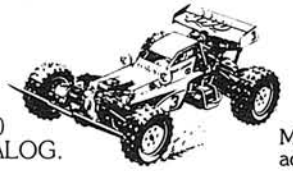

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ACTION WEEKEND

(Continued from page 84)

his work on the No. 15 Crisco car of Brett Bodine. According to the judges, the best-looking Concours machine was Chuck Massey's Havoline Ford Thunderbird driven by Davey Allison. This car is almost as detailed as the full-scale car, including an in-car camera and even a mini Davey Allison. At the conclusion of the Concours judging, the cars were lined up on the track for the famous Parade of Cars, which allows spectators to look closely at these beautiful machines. Shortly thereafter, the track was cleared for the second running of the Car Action Race of Champions.

As mentioned before, the Invitational Class A-Main was to be a 200-lap feature, while the Amateur and 1/12-Scale Invitational Classes would run 5-minute Mains. The A-Main in the Stock Amateur Class started with Matt Dahm blowing past the 2nd-place car, up to Gish's bumper, and eventually past him for 1st place. Dahm had a hard time shaking Gish, but was still holding the lead when a bum battery sent him to dump city just past the 4-minute mark, and Gish blew past him for the lead and a 1st-place

(Continued on page 96)

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ACTION WEEKEND

(Continued from page 90)

finish. Gish drove a Vicfor Concept One chassis. Second place went to Craig Carrey, who made his way up from the 9th starting position, and 3rd place went to Frank Trinchitella, who came up from the 7th position on the starting grid. The A-Main in the Amateur Modified Class was dominated by Dennis Vindedahl, who skated to an easy two-lap victory with his Twister-powered TRC Pro 10. Second went to John Robinson, running a Predator with a Reedy motor, and 3rd also went to a Predator, this time driven by Dave Ruber and powered by Twister.

In the 5-minute 1/12-scale Invitational A-Main, Hechler pulled out the victory with a clean 48-lap run. Bartos and Doseck finished a lap down in 2nd and 3rd places, respectively. Clausen fell from the second starting position to a 4th-place finish with 46 laps. While the 1/12-scale cars are a little quicker on the track, they don't look large enough running on the huge superspeedway. The 1/10-scale cars drew much more crowd response, especially the long races that included pit stops.

(Continued on page 102)

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SECOND
LOOK
SERIES

Return of the HORNET

A Tamiya Bestseller is Re-visited

by RICH URAVITCH

IN THE PAST YEAR and a half, it has become quite evident that readers who have just "tuned in" to RCCA have missed our earlier reviews of many popular cars. The repeated requests for track reports on this car or that car in our fan mail have forced us to face this fact. So, in the "Second-Look Series," we'll reprint the original review and add an update of a car's strong points and weak points with solutions to any problems. The "SLS" will be accompanied by a mini buyer's guide of some of the most successful after-market goodies. Let us know what car you'd like to read about.

AS ONE OF THE earliest off-road cars available, the Tamiya Hornet was, to many, a stepping stone into the world of radio control, and it's still one of the most popular entry-level cars on the market. Although the Hornet has now taken a back seat to some of the newer, more advanced, entry-level cars, it still offers newcomers to R/C just about every desirable trait there is to be had in an entry-level R/C car. This review is my impression of the Tamiya Hornet—one of the hottest-selling cars around. The Hornet embodies all of the desirable qualities of an off-road machine, e.g., simplicity, ease of assembly, and, most important, ruggedness.

The simplicity aspect yields another important requirement: ease of maintenance and "supportability." After all, you do prefer racing your car to working on it, don't you? The spare parts pipeline made possible by MRC through its dealers ensures that you're out of the pits and onto the track in short order.

THE KIT: Everything you need to build the car, including a special Allen wrench, grease, and even oil for the shocks, is contained in the kit. About all you'll need to provide are some common tools, such as pliers and screwdrivers. To operate the Hornet, you'll need a 2-channel (or more) car radio, a battery pack and charger for the car itself. (Not on an airplane channel, please!) My Hornet is guided by a conventional twin-stick two-channel Techniplus radio by Acoms from Altech Marketing*. This is a great little unit, and its compact transmitter fits comfortably into your hands. The receiver, battery pack and two servos (one each for speed control and steering) easily fit into the allotted space.

The kit itself is well-thought-out with all the required parts located either in numbered packages or on "trees" (in the case of molded items). The 18-page assembly manual is well-illustrated with step-by-step instructions.

Tamiya uses the right material for the different parts by molding nylon for gears and high-impact plastic for the major components, and by supplying metal shafts, shocks and linkages. The transparent polycarbonate body and rear wing require only trimming and washing in detergent prior to painting.

Optimistic racer with his prepped Hornet at the MRC Race Day Series.

The Hornet is powered by the RS-540S motor, which will propel your Hornet at a rather brisk clip. Higher-performance motors are available as after-market accessories but, generally speaking, greater power will come at the expense of endurance. That simply means you might go faster, but not for as long!

ASSEMBLY: The actual assembly of my Hornet took two evenings, with a third devoted to painting. By following the exact sequence in the manual, I had no problems. I recommend that you have your radio system available while you're assembling the car; once you get started, you'll find it hard to put the project aside while waiting for your radio. Charge your battery pack at this time also; there's no reason to wait until you've finished assembly; the dunes are calling!

I painted the body and wing after washing the parts in detergent and warm water. This removed any residual film that might have been deposited during the molding process. I used paints made specifically for this type of body; I'm not sure what makes them special, but they stick very well, even after repeated "bashings."

I painted my Hornet white and yellow and finished the body using the extensive sheet of self-adhesive, multi-colored trim decorations. These take a bit of slicing and trimming to get around corners but, once applied, they're very attractive and hold up well. I personalized my car by adding names, including "Air Age Racing," with transfer lettering purchased at an art supply store.

PERFORMANCE: Running the car is a ball! During many hours of hard driving in snow, mud, dirt and puddles, the Hornet has shown the stamina of a thoroughbred; nothing has broken and, although the body doesn't look as squeaky clean as it used to, it's still in pretty good shape. About the only thing I see on the horizon is a new set of rear tires, as mine are starting to look like racing slicks!

After running this car, it's easy for me to understand its widespread popularity. It's competitively priced and a great performer. If you're just getting into off-road, try one. If you're already in, try one. It's a great machine and more fun than MTV!

**Here are the addresses of the companies mentioned in this article:*

MRC/Tamiya, 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.

Altech Marketing, P.O. Box 286, Fords, NJ 08863.

(More Hornet information continued on next page.)

TAMIYA

HORNET

Type ..... 2WD off-road
Scale 1/10
Sug. Retail Price $124.95

DIMENSIONS:
Overall Length ..... 15.5 inches
Width ..... 8.75 inches
Height ..... 5.75 inches
Wheelbase ..... 10 inches
Front Track ..... 6.625 inches
Rear Track ..... 7.25 inches

WEIGHT:
Gross (w/bat.) ..... 52 ounces

BODY:
Type ..... Buggy
Material ..... Polycarbonate

CHASSIS:
Type ..... Tub style
Material ..... Plastic, ABS

DRIVE TRAIN:
Type (prim./sec.) ..... Gear
Differential ..... Geared
Bearing Type ..... Plastic bushings

SUSPENSION:
Front: Type ..... A-arm
Dampening ..... Coil spring
Rear: Type ..... Rolling rigid rear axle
Dampening ..... Oil-filled coil-over

WHEELS:
Front: Type ..... 3-piece plastic
Dimensions (DxW) ..... 1½x½ in.
Rear: Type ..... 3-piece plastic
Dimensions (DxW) ..... 1½x1¾ in.

TIRES:
Front ..... 2⅞x⅞ inches, ribbed
Rear ..... 3½x2 inches, knobby

ELECTRICS:
Motor RS-540S
Battery Type Required 7.2V
Speed Controller ..... 3-step forward

OPTIONS AS TESTED:
Techniplus 2-channel radio system.

COMMENTS:
The Hornet is an easy-to-assemble entry-level kit. It's durable and reliable and has tremendous after-market parts support. Wide use of plastic/nylon parts, which will wear with time, and updating will be necessary. Cost of replacement parts is reasonable. Suspension is in greatest need of modification.

HORNET UPDATE

by FRED MURPHY

AS THE YEARS pass, the popularity of the Tamiya/MRC Hornet continues, and letters pour in daily. While we revisit this great entry-level off-roader, let's see what we've learned about the Hornet since its introduction.

The Hornet's consistently good overall reliability and durability have given many manufacturers a goal to shoot for, but, as with any product, there's always room for improvement. The proliferation of after-market support for the Hornet/Grasshopper cars shows their popularity, and manufacturers provide parts and accessories for all our recommended improvements. The out-of-the-box car is as reliable as any on the market, but, for increased performance, these areas should be updated to ensure maximum enjoyment: the front suspension, the speed control/resistor assembly and the rear drive train.

- The front suspension on the stock Hornet is simple in design and, unfortunately, simple in performance. The shock towers are a weak point on the chassis and are prone to breaking under extreme conditions. In addition, the stock shock towers are fairly short, and replacing the existing assembly with after-market oil-filled shocks will limit shock travel and also limit the dampening effect of the shocks. Both problems can be solved with one complete assembly from CRP. The CRP front shock kit provides a pair of oil-filled coil-over shocks and an aluminum shock-tower assembly that easily replaces the stock units. The CRP unit will increase shock travel and dampening, so will eliminate the Hornet front-end bounce. This, in turn, will greatly improve steering.
- The second problem area is the three-step speed control and resistor assembly. This assembly is very reliable, but an external resistor that's somewhat exposed to the elements can cause some problems. The resistor becomes very hot at times (as many of you have found out), but the biggest problem arises when moisture or hard bumps cause this piece of ceramic to crack. When this is damaged, your car will lose its slow-speed capability. To solve this, companies like Parma International have introduced wiper-blade speed controls that have the ceramic resistors built-in. This unit is installed in place of the stock unit, so putting the resistor further inside and under the body for even more protection from the elements.
- The rear drive-train assembly on the Hornet is as rugged as they come, but beefing up is a must if you want to get the most from it. The number-one improvement is the installation of ball bearings, which will greatly reduce damage-causing friction. This bearing installation should also be considered for the front wheels. One of the inherent problems with the Hornet's gearbox assembly is the side-to-side play of the axle shafts that can cause incorrect gear mesh and premature failure. The Bulletproof Diff Kit from Miracle Speedway addresses this problem with proper axle shims that prevent excess axle movement.

Another apparently weak area of the gearbox assembly that has also been addressed by Miracle Speedway is the housing itself. The pounding of off-road conditions and the use of larger-than-usual tires will strain the gearbox and separate the housing at its seam. To prevent this, Miracle has provided us with a strengthening kit to keep it all together under the worst conditions.

Although the Hornet's weaknesses aren't ones that might discourage many of you, there is one that's particularly frustrating when it comes to improving performance. As all Hornet owners know, the kit is designed to use *only* an 18-tooth pinion gear, and attempts to use anything else will turn the gears into ground plastic. But, thanks to CRP and its adjustable motor mount, you can now use that modified motor more effectively, or gear the Hornet for the short-track acceleration that will make the difference. The adjustable mount was designed for the Frog, but, with a minor chassis modification, it will fit the Hornet. So don't get frustrated and throw that old, reliable Hornet in the spare-parts pile: The problems that we didn't see when the Hornet was introduced *do* have solutions. ■

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Assembled	*#21343-$49.95*	*#21719-$64.95*

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23603	RA5845 Hornet	118.40	$84.95
23333	RA5848 Bruiser	394.60	$274.95
10065	RA5850 Wild One	202.15	$144.95
22641	RA5851 The Fox	194.30	$132.95
22558	RA5842 Porsche 956	205.20	$144.95
10066	RA5849 Toyota Toms	164.40	$116.95
10067	RA5852 Newman Porsche	164.40	$116.95
22713	RA5854 SuperShot	330.20	$229.95
10068	RA5853 Road Wizard	146.29	$104.95
23101	RA5855 Boomerang	192.70	$136.95
22628	RA5456 The Falcon	140.55	$99.95
22648	RA5857 BigWig	320.75	$224.95
22529	RC5858 Blackfoot	125.00	$89.95
22560	RC5859 Porsche 959	294.50	$210.00
22631	RA5860 Monster Beetle	178.60	$129.95
22346	RB5861 Striker	116.25	$92.00
23604	RA5862 Hot Shot II (4WD)	224.95	$164.95
22830	RB5863 Lunch Box	116.75	$85.00
10069	RA5864 Toyota Celica Rally	299.95	$213.95
23334	RA5865 Clod Buster (4WD)	305.00	$218.95
10070	RA5866 Super Sabre	202.95	$144.95
10071	RA5867 Thundershot	189.95	$134.95
23606	RA5868 Lotus Honda 99T	154.95	$112.95
23605	RA5869 Wliams Honda F-1	154.95	$112.95
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11629	NEW!! Avante w/o motor	415.95	$289.95
11630	NEW!! Thunder Dragon	179.95	$124.95

ACTION WEEKEND

(Continued from page 96)

All that remained was the Race of Champions. After a brilliant qualifying run, Ralph Burch was the man to watch, but considering the company he was in, the slightest mistake could cost him the choice position at the front of the pack. This, however; didn't happen. Burch jumped to an early lead and, with some excellent driving and quick work by his pit crew, he was able to hold onto the lead for the duration, putting nine laps on the 2nd-place finisher, Dave Hechler, as he crossed the line for lap number 200. Bartos finished 3rd, while Tate McDaniel captured 4th place.

By the end of the Weekend, we'd seen a number of innovative new products designed exclusively for endurance oval racing, e.g., the quick-change battery systems and the Hyperdrive, which experienced tremendous success. It's safe to say that Lake Whippoorwill pioneers 1/10-scale on-road and endurance racing at this level, and we should partly credit Bob Hosch for the development of the cars and accessories for running these long-distance races. Bob is the Grand Marshal of the superspeedway, and he developed the program. At the same time, let's give credit to the manufacturers for their efforts in building these superspeedway machines. And the cars the factory drivers ran weren't one-of-a-kind specials built for the sole purpose of racing at Lake Whippoorwill. Each manufacturer assured us that these new cars would go into production, so the next time we're at Lake Whippoorwill, we may see *you* running with the big boys! ■

CAR FINISHING

(Continued from page 63)

are held in place with thick molding strips to prevent "pop-out" at 200mph, and this is a prominent detail. The driver's side window has no glass, and the lack of molding and application of a window net decal (or MonoKote strips to simulate the net) will enhance the illusion. Black MonoKote or artist's shading material can be used to simulate the heavily tinted upper portion of the windshield, which is easily applied to the inside of the body. Use the same method for the windshield support braces (also quite substantial—they'll keep a tire from coming through, even at racing speeds). Small silver or black rectangles of MonoKote are placed around the windshield frame to look like

(Continued on page 111)

CAR FINISHING

(Continued from page 102)

retainer clips, and this material is also used to duplicate the rear window hold-down straps. The grillwork on the nose is easily simulated with artist's shading film applied to some silver MonoKote, which is then trimmed to duplicate the radiator inlet and brake and oil cooler duct openings. The dot pattern on the shading film makes the silver MonoKote look like fine screen mesh.

Some red striping is applied along the fenders as on the actual car, and the body is now ready for the Pro-Cut finishing touch. Using the full-size car as a guide, carefully place the decals in their respective locations. You don't get any extras, so you have to make sure that your hands are clean and that the surface is prepared. All of a sudden, you have a realistic race car in front of you! BoLINK's stock-car decal sheet gives you all the front fender decals you'll need, in accurate scale, to duplicate the characteristic cluttered appearance that has become a trademark of Winston Cup stockers. I used photos of the real car to get all the decals exactly where they belong, and every one was on the sheet. (A tip of the hat—er, helmet—to BoLINK for making my life easier!) The car looked so authentic that I even stuck a yellow "Tech Inspection" dot on the windshield. This dude is ready to race! The completed body was mounted onto a C&M* Cobra chassis—a winning combination.

The second Oldsmobile body for this comparison is made by Parma. Although there's barely any surface detail, remem-

(Continued on page 113)

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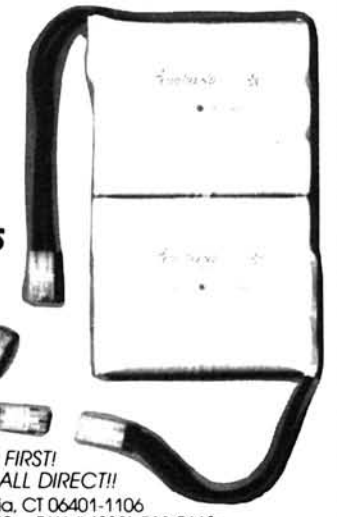

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CAR FINISHING

(Continued from page 111)

ber that a contemporary NASCAR stocker has undergone a lot of "massaging" in areas of body contour and panel fit. Flush covers replace headlight and tail-lamp assemblies, and the grillwork is smoothed extensively. (On high-speed tracks, teams sometimes use duct tape over portions of the grills and ducts to smooth out the car even more for a fast qualifying time.) The Parma body has enough details to provide a basis for a realistic-looking car, and a little trimming, as shown, produces a fine replica. The before-paint weight is 5½ ounces after the excess Lexan has been trimmed away.

This body also has some *un*scale-like features: The front end is a little too rounded, and the windshield angles forward too steeply. There isn't even enough room between the base of the windshield and the back of the hood for the cowl air inlet. This may also have been done intentionally to improve air flow, but it's quite noticeable. Fellow racer Joe Bruni asked me to make his favorite car, the bright Hardee's Cutlass, driven by Cale Yarborough (now retired) and Dale

(Continued on page 114)

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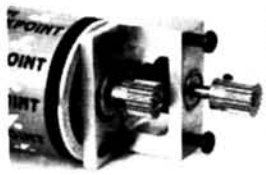

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CAR FINISHING

(Continued from page 113)

Jarrett. Orange paint was mixed to match the color on Parma's Hardee's decal sheet, and sprayed on the hood and roof after the windows and lower body portions had been masked off. This masking is slightly more difficult than the previous example, due to the narrow stripe paralleling the color division line. The logos are all on Parma's sheet, but the numbers must be made by hand. The decals were applied after the body had been trimmed as before. (Note that certain details are somewhat different; use photos of the actual car if you want to get it right.) The numbers were cut from orange Mono-Kote, with a little yellow airbrushed across the tops, as on the full-size car. These orange and yellow numbers were transferred to a sheet of black, and cut out again, leaving a black border. The roof numbers are white with a black outline. The front fenders were decorated with the appropriate decals from the BoLINK sheet mentioned earlier, and you'll notice that the arrangement differs slightly from the Piedmont car. Each team has its own decal arrangement, and, as long as the display conforms to the NASCAR tech sheet, it's legitimate. When completed, this body was mounted to a prototype-design chassis the performance of which has yet to be tested.

Our third project Oldsmobile, the MRP Cutlass, gets my vote for the most accur-

(Continued on page 122)

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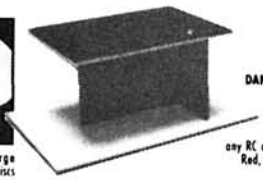

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What's New

T.A. EMERALD MOTOR CLEANER

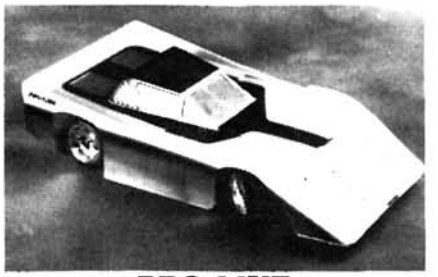
Performance Plus motor cleaner is a maintenance tool that will noticeably improve your motor's performance and efficiency. Performance Plus also prolongs running time and extends motor life, and it's recommended by several leading motor builders, including Revtech and Peak Performance, who have won National Championships in '86, '87 and '88.

For more information, contact T.A. Emerald Industries, 18361 Enterprise Lane, Huntington Beach, CA 91648.

THORP MFG. AVANTE BALL DIFF

Thorp has introduced its new front and rear ball differentials for the Tamiya Avante. These differentials are made with the same high-quality materials and standards as other Thorp differentials. By adding ball differentials to the Avante, you'll be able to fine-tune handling for any track condition or driving style.

For more information, contact Thorp Manufacturing, 380 S. East End Unit H, Pomona, CA 91766.



PRO-LINE WINNING WEDGE BODY

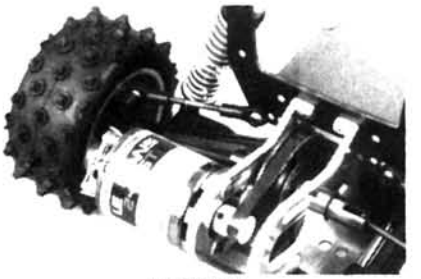
Attention oval racers! Blast your competition with the "Winning Wedge"—a dynamite new body from Pro-Line. The Wedge's sleek, aerodynamic design is sure to give you the leading edge in oval competition. The Winning Wedge comes in a clear Lexan finish and fits most 2WD and 4WD 1/10-scale cars. For precise height clearance and maximum performance, Pro-Line recommends its new adjustable body mounts.

For more information, contact Pro-Line, P.O. Box 456, Beaumont, CA 92223.

PARMA CAT REPLACEMENT BODY

Parma's newest off-road body is a direct replacement for the Schumacher Cat. Molded in clear Lexan, it's available in three different versions: No. 10271 contains the body, undertray, wing, wing wire and wing mounts; No. 10271B contains the body only; and No. 10271T contains only the undertray.

For more information, contact Parma, 13927 Progress Pkwy., North Royalton, OH 44133.



J CAR DDS TRANSMISSION

Now you can own the simplest, most efficient transmission available for your Ultima, and it's also the easiest to maintain. J Car now offers the DDS transmission, featuring either the stock Turbo Ultima differential or the Thorp Ultima differential. The DDS transmission can be set up to use 32-, 48- or 64-pitch gears, as well as the new Hyperdrive belt-drive system. It works great for dirt ovals, off-road and asphalt racing.

For more information, contact J Car, 52 Perkins Ave., Norwich, CT 06360.

SEES MACHINE ALUMINUM WHEELS

Introducing Sees lightweight, one-piece, aluminum wheels: Precision-machined, they're perfectly round, balanced and extra light, so they run true. These reasonably priced wheels are sold in pairs to fit the RC10, Ultima and Optima cars as well as the Blackfoot and the Clod Buster.

For more information, contact Sees Machine, 1414 W. 134 th St., Gardena, CA 90249.

TAMIYA GRASSHOPPER II

One of the first R/C cars on the market, the Grasshopper is now legendary. Tamiya's beginner-level R/C car has introduced thousands of people to the fun of off-road running, and now there's a new contender in the ranks of novice-type cars: the Grasshopper II. The kit features a bathtub frame made from durable plastic, a sealed gearbox with a differential for cornering control, and a three-step forward-and-reverse speed control. It's designed for use with the popular 7.2V flat packs. For suspension, the Grasshopper II includes four coil springs to absorb shock, and the body is of high-impact plastic formed into a rounded, more aerodynamic shape.

For more information, contact MRC, 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.

SPEEDWORKS MOTOR LAB

Speedworks and Trinity have introduced the MOSFET Motor Break-in Lab. The Break-in Lab can be powered by a 7.2V, 8.4V, 12V battery or a DC power supply of less than 15 volts. The Motor Lab will allow you to break-in your motor while monitoring voltage and amperage draw through the metering terminals with a separate multimeter. It keeps your motor running efficiently and strongly.

For more information, contact Speedworks, 1901 E. Linden Ave., Linden, NJ 07036.

MRP THUNDERBIRD BODY

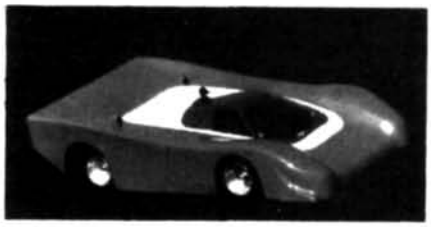
MRP has expanded its line of stock-car bodies again: This time, it's the all-new 1989 Thunderbird, with a slick new body that's smaller and lighter than the 1988 version. The smaller body also has a lower coefficient of drag, helping to improve top-end speed, but MRP will continue to produce the 1988 Thunderbird.

For more information, contact Model Racing Products, 18676 142 Ave. NE, Woodinville, WA 98072.

NERON ASSOCIATES RACE DIRECTOR

Make racing and lap counting fun for your entire organization. Eliminate the major hassles of paper shuffling and questionable lap counting that can turn running an R/C car race into a burdensome chore. The Race Director is a software-based computerized racing system developed by racing enthusiasts and designed to make club and competition racing easier to manage.

For more information, contact Neron Associates, P.O. Box 348, Germantown, MD 20874.



TMS PRODUCTS GTP-ZX TURBO

TMS Products releases the Nissan GTP-ZX—the first in a series of high-quality, highly detailed 1/10-scale polycarbonate R/C car bodies. The TMS Nissan features great aerodynamics, canard wings, windshield clips and wiper, realistic air ducts, and intricate side detailing that includes gas caps and more.

For more information, contact TMS Products, 1948 A Del Amo Blvd., Torrance, CA 90501.

GREAT PLANES KYOSHO AERO-STREAK

Equipped with a wind-cheating, aerodynamic body, the new Kyosho Aero-Streak is an exciting buggy that comes already assembled and offers excellent 4WD handling for new drivers. Based on the popular design of the Kyosho Shadow, the 1/10-scale Aero-Streak features a 4-wheel shaft drive with front and rear differentials, a LeMans Stock 05 motor, 4-wheel independent double-wishbone suspension, oil-filled shocks and a rugged chassis. The beauty of the Aero-Streak, in addition to its space-age body, is that factory assembly gets the driver to the track fast; just install a 2-channel radio and battery, attach the body and go!

O.S. .21 RF-B

O.S. introduces a new .21-size engine for beginning and intermediate hobbyists. The O.S. .21 RF-B offers the high

(Continued on page 118)

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by **Radio Control Car Action,** nor guarantee product performance or safety. When writing to the manufacturer about any product described here, be sure to mention that you read about it in **Radio Control Car Action.**

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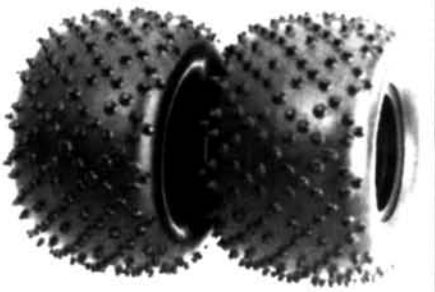
power, reliability and durability that you expect from O.S., and at an affordable price. The O.S. .21 RF-B will put out 1.2bhp at 28,000rpm, and it weighs just 10.5 ounces. It features Schneurle porting and ABC construction for high power.



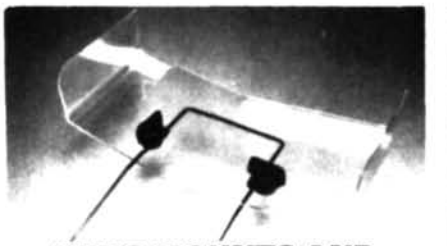
DURATRAX MONSTER TIRES

DuraTrax is pleased to introduce new tire designs for monster trucks. These durable tires are made of pure rubber and grip very well on nearly any kind of track surface. There are tires available for most of the monster trucks.

For more information, contact Great Planes Model Distributors, 1608 Interstate Dr., P.O. Box 4021, Champaign, IL 61820.

TEAM LOSI SHOCK OIL

A racing shock is only as good as the fluid inside it. Team Losi's pure, synthetic, shock fluid offers many advantages not found in common oils. It's foam resistant, color-coded for each weight, won't adversely affect O-rings or plastic parts, and, most important, unlike the petroleum-based oils, it isn't affected by temperature changes. Available in 5, 10, 20, 30, 40, 50 and 70-weight SAE, there's a quality Team Losi shock fluid for every need. A special pack includes 5- to 40-weight fluids at special savings.



WING MOUNTS AND PRE-BENT WIRE

The difference between winning and losing is making the fine adjustments needed to meet track conditions. The new No. A-8102 adjustable wing mounts designed by Team Losi for the JR-X2 are ideal for all scales of R/C racing. With the simple cam lock, you can mount and adjust the wing in seconds, without tools. Also shown is the pre-bent wing wire that fits the JR-X2, RC10 and other popular 1/10-scale off-road cars as well as the V-Wing for 1/10- and 1/12-scale cars.

For more information, contact Ranch Pit Shop, 1655 E. Mission Blvd., Pomona, CA 91766.

COMPETITION HOLESHOTS

The Holeshots are precision-engineered and manufactured 1/12-scale electric dragsters that feature a lightweight, G-10 fiberglass chassis and radio tray, an aircraft-aluminum drive pod and steering cross bar, as well as precision ball bearings throughout. The low-friction chain drive transmits power to the ground via custom-machined aluminum wheels and foam tires. To cover the Holeshots, each kit comes with a strong, lightweight Lexan body.

For more information, contact Competition R/C Cars, 111 21st. Ave., Bradenton, FL 34205.

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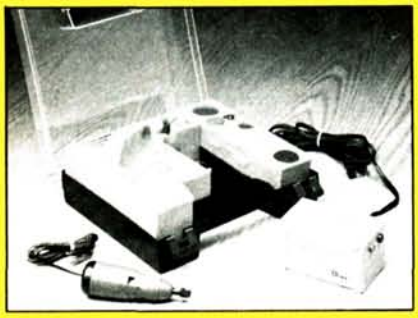

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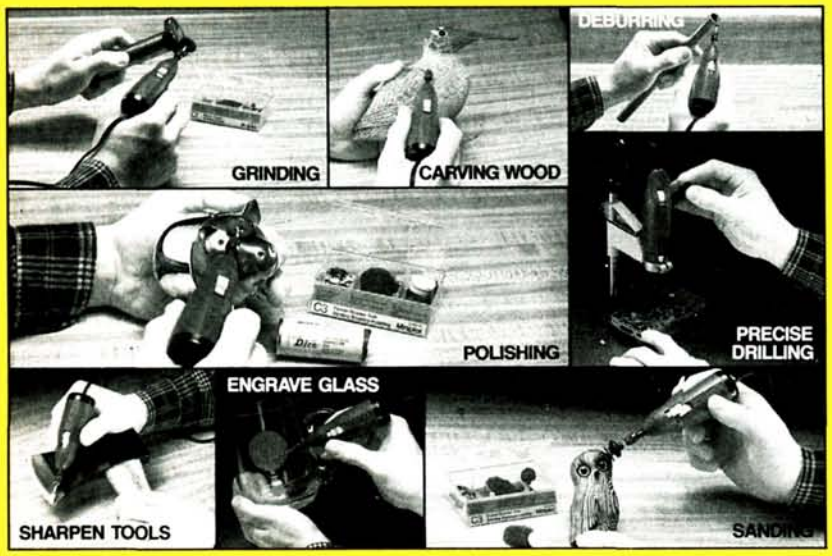

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CAR FINISHING

(Continued from page 122)

some extensive instruction that's beyond the scope of this article; if enough interest is shown, I'd be happy to do a "how-to" on this process. At any rate, thanks to the scale outlines, the finished product bears an uncanny resemblance to the real Crown/Skoal No.55 racer, and the car was mounted on a McAllister's* Outlaw chassis.

It would be interesting to see how one of these Cutlass bodies would look done up as a pro-stocker, now that Oldsmobile stalwart Warren Johnson has switched to this body for his drag racer. Future project, anyone?

**Here are the addresses of the manufacturers mentioned in this article:*

Parma International, 13927 Progress Pkwy., North Royalton, OH 44133.

BoLINK R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245.

MRP, 18676 142nd Ave. NE, Woodinville, WA 98072.

Pro-Cut Decals, 415 Poteet Lane, Mechanicsville, VA 23111.

Floquil, Rt. 30N, Amsterdam, NY 12010.

Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

C&M Manufacturing, P.O. Box 680233, Park City, UT 84068.

McAllister Racing, 2205 First St., No. 107, Simi Valley, CA 93065. ■

DIRT DIGEST

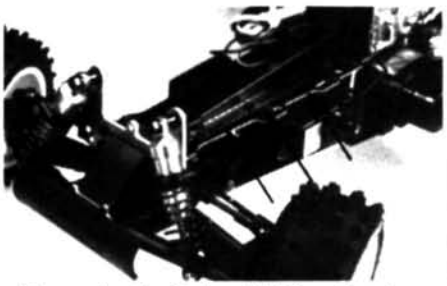
Close-ups of off-road machines

by BILL O'BRIEN and BOB KANE

IT'S IMPORTANT FOR A magazine to print information about a new car or truck as quickly as possible, and reviews are great for that: They can give you a valuable first impression of a car's performance. However, reviews are usually short-term judgments based on only a few weeks of building and running. Equally important is a car or truck's long-term endurance and its response to use. Sometimes, quirks and faults appear only after long-term ground bashing, and that's what reviews leave out. Until now, it's been the follow-up that's been missing. Fundamental questions ("Will my differential fall out after the first month of running my off-roader?") have been left unanswered, and we're going to see if we can do something to fill that gap.

Optimal Mid

Let's start with a simple problem on a popular car: Kyosho's* Optima Mid. The Mid is one of the best electric cars Kyosho has produced, and after five months of beating one into the ground, I've decided it's very durable. I've yet to break anything, but I've already had to tear the car down *four* times to clean it. I traced the problem to the Lexan belt covers.



After racing the Optima Mid for a few days, you'll notice dirt building up under the Lexan belt cover. Tape along this mating surface reduces dirt intrusion, as will a silicone gasket. See text.

When you're assembling the drive belt covers, the manual directs you to attach the bottom cover with double-sided tape. The upper belt cover, however, is screwed into place, and the manual tells you to use a bead of thread-lock compound along the lip of the cover to create a seal between it and the chassis. That's a good idea, but as you muscle your car around the track day after day, you'll soon find debris collecting inside the upper Lexan belt cover. Turn the wheels by hand and you'll hear that terrible sound of sand hitting sand, as your gear system pulverizes the dirt particles.

At that point, the only thing you can do is tear the car apart and clean it—thoroughly. But you might have *prevented* the problem with a little more protection. When you mount the upper and lower belt covers, follow the manual exactly; Kyosho's recommendations will be your first line of defense. Afterward, use some black electrical tape to externally seal the seams of the upper and lower belt covers. Also, use a strip of tape across the front and rear chassis contact points. The thinner the electrical tape, the better, and Radio Shack's tape is very good.

Loctite Silicone Sealer can be used to form a gasket to keep dirt away from the Optima Mid's belt.

An alternative method for sealing the belt covers is making a gasket with Loctite* Silicone Seal. First, roughen the surface of the upper radio plate with fine sandpaper, so the silicone has something to grab onto. Next, apply a bead of silicone around the Lexan belt cover where it comes into contact with the fiberglass radio plate, screw the belt cover into place and let it dry. When the silicone is dry, lift off the belt cover and a gasket that's perfectly formed to your belt cover will be left on the radio plate. Nothing will make it waterproof, but with either of these methods, you'll find that your teardown periods—at least, for belt cleaning—are fewer and farther between.

Top: *Slightly stretched sping from retractable pen rejuvenates sagging springs and adds a bit of much-needed dampening.*
Above: *Completed modification with inner and outer springs.*

Budget Problems

With all the emphasis on budget racers and their own brand of grassroots technology, you'll find more Hornets, Strikers, FX-10s and Grasshoppers hitting the road than ever before. These cars share the use of spring dampers (a coil spring over a retaining rod) instead of shock absorbers at the front end. Unfortunately, unsupported springs tend to sag. Any photo of Futaba's* FX-10 will point that

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DIRT DIGEST

Gas pains can be cured on the 1/10-scale Kyosho Assault. Self-sticking lead weight will keep the front wheels on the ground and improve handling.

out to you. And as your suspension slowly sinks into the ground, the steering on your car will go with it.

The most widely used solution is the installation of a set of short coil-over shock absorbers, but, sometimes, the money for those shocks could be better spent on a good mid-range motor or a new battery. Instead, go to your local stationery store and pick up two Bic Click pens for about a buck each. Unscrew the pens, remove the cartridges, take the springs off and install them on the support rod, inside the original dampers (you'll probably need to stretch the pen springs about ⅛ inch to fit correctly). This won't give you Grand Prix handling, but it *will* stabilize the front end, and you might be surprised at the amount of dampening and rebound you'll get from the modified dampers!

Agile Assault

The Assault is Kyosho's most popular 1/10-scale gas car. The low price, ease of assembly and the high-performance engine included with the kit can make it an instant success that won't empty your wallet. Once you break in the CZ-1 engine, however, you'll find that the speed the car can achieve far exceeds what it can handle. It's not uncommon to see an Assault catapulting across a track with its front wheels only skimming the ground as acceleration and the weight of the rear-hung engine push everything back and down. Nor is it unusual to see an Assault sputter and die in mid-field when the fuel drops below the halfway mark in the tank. Neither of these problems is disastrous.

A quick trip to your local auto parts store will take care of the wheel standing. Buy about 100 grams (nearly four ounces) of self-sticking wheel weights (used on full-size cars to balance the wheels); space them evenly across the front bumper, and your skid-steering will disappear, leaving you with a car that actually corners well.

For the gas pains, the solution is more complex. Apparently, the CZ-1 would like to have its fuel delivered under slightly more pressure than is possible using the stock setup. You'll need to order two Kyosho parts, SG-13 (a fuel-tank set for the Stinger) and AB-11 (a Stinger muffler). Remove the stock gas tank and muffler from the Assault and bolt in the Stinger parts. (If you have a power drill, you don't even need to buy a new muffler; just drill a small hole in your current muffler for a Du-Bro* pressure tap.) You'll find that the replacement equipment gives you a pressurized fuel-delivery system using exhaust gas routed from the new muffler into the new gas tank.

Next Up

So much for this month's installment. Next time we'll take a look at what might be the oldest chassis still in production—the Tamiya* Blackfoot (née Frog, née Lancia)—and the front-end disasters that can develop when you're running with a chassis that *wasn't* designed to do what you're doing with your Blackfoot. (I know, because I'm doing it with mine, too!)

In the meantime, if you're having a problem with your car, or if you've found a solution to a performance or endurance problem, drop us a line and we'll see what we can do to help you, or just spread the word about your own wonder cure. A problem won't go away if you just throw money at it—experience helps a little!

**Here are the addresses of the manufacturers mentioned in this article:*

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.

Loctite Corp., 18731 Cranwood Park, Cleveland, OH 44126.

Futaba Industries, 555 W. Victoria St., Compton, CA 90220.

Du-Bro Products, 480 Bonner Rd., Wauconda, IL 60084.

Tamiya/MRC, P.O. Box 267, Edison, NJ 08818. ■

SUPER BAJA

(Continued from page 71)

inside the rear gearbox was stripped of all its teeth, while all the other gears in the transmission were unharmed. With this information, we called the people at Cobra International and told them what had happened to our test car. This problem with the final pinion gear appears to be relatively rare and occurs only in a very few of the first Bajas produced. On closely examining the gear in question, we could see evidence of a poor molding process on the prototype gears, and this caused the failure. The manufacturer claims that the Super Baja no longer suffers from this problem.

The Super Baja has ball bearings included in the transmission on either side of the differential, both front and rear, and plastic bushings are standard in the wheel hubs. For optimum performance, I recommend that the wheel-hub bushings be replaced with optional ball bearings, as this will ensure the best possible friction-free running. Another area to be considered is the stock speed-control unit. This unit is suitable for general purposes, but if you want your Super Baja to be really *super*, you should consider replacing it with an electronic unit. With the very effective belt-drive transmission, the addition of optional ball bearings for the wheel hubs and an electronic speed control, your Super Baja will be a real contender at a fraction of the cost of most of the competition.

Fully assembled R/C cars are now a reality, and these cars can compete with the best of them. Out of the box, the Super Baja has great potential, and with some attention to a few areas, this entry from

(Continued on page 134)

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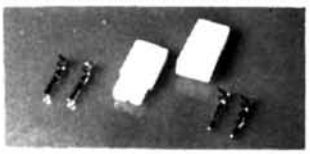

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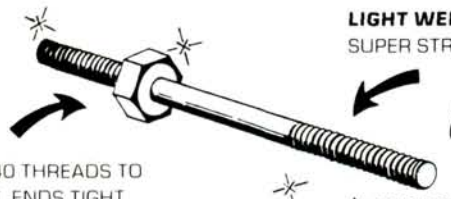

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SUPER BAJA

(Continued from page 130)

Cobra International is a real competitor.

**Here are the addresses of the manufacturers mentioned in this article:*

Cobra International, 3338 Cromwell Dr., Norfolk, VA 23509.

Kyosho, distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820. ■

PONY EXPRESS

(Continued from page 83)

sheen by shining it with a soap pad or fine steel wool, then buffing it with metal polish.

The radio gear is all from Futaba, with a Magnum Sport 2P transmitter, an R2GS receiver with BEC, a standard S148 steering servo and an MC112B electronic speed controller that replaced the stock unit. To keep out dirt and moisture, cover your receiver with a rubber bag, and put a piece of electrical tape over the adustment screws in the speed controller after you've set it up. Remember to let your speed controller and motor cool off about 10 minutes after every run.

The Midnight Pumpkin was reviewed by Steve Pond in the May '88 issue of *RCCA*,

(Continued on page 136)

TRICKED OUT '10

Your RC10 can look super trick with the addition of a set of Sees' one piece aluminum wheels.

Incredibly concentric and lightweight due to computerized manufacturing techniques, your Sees' wheels are perfect for racing as well as concourse.

They're at your local hobby shop.

Both standard profile (shown) and low profile wheels are available for the RC10.

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These mammoth Clod Buster wheels are available through your local dealer too!

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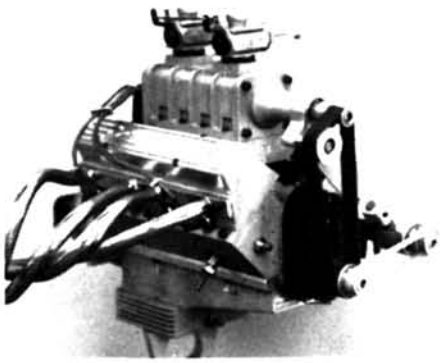
Distributed by Horizon Hobby Distributors, Inc.

Conley V-8—Smallest V-8 Production Engine



The Conley "362" is the world's smallest production model V-8, and is now available in a *rough casting* kit. With the use of a Bridgeport Milling Machine and a lathe you will be able to machine the kit-provided material into a working V-8. Items included in the kit: castings (block, valve covers, pan heads, and intake), piston rings, water pump, timing belts and pulleys, camshaft lobes, injection-molded parts, wristpins, crank pins, 95% of the required metal, valve springs, screws, taper pins, dowel pins, Loctite, O-rings, and blueprints. The engine has a bore of .750 and a stroke of .625 which gives a total displacement of 36.2 cc or 2.2 ci and weighs approximately 5 lbs. It measures approximately 6" long, 4" wide, and 7⅛" to the top of the carbs (when optional supercharger housing is used). There is an operating rpm from 2,000 to 12,000. Perfect for ¼-scale cars and boats.

Total price, including shipping and insurance	$459.00
Optional items:	
Supercharger Intake Manifold (nonfunctioning), including pulleys and belt	$49.95
Ball Bearings (11 required)	$108.00
Blueprints *(Will be be credited toward engine purchase; engine cannot be made from blueprints alone.)*	$40.00

Illinois residents add 6¼% sales tax. Make checks (money order, cashier's or certified checks) payable to:

Conley Precision Engines, Inc., 820 Ridge Ave., Suite G
Lombard, IL 60148 (312) 953-8882

PONY EXPRESS

(Continued from page 134)

and that issue also featured the "Monster Truck Shootout." In this Shootout, all the trucks were run with stock setups. Even so, the Pumpkin placed a respectable fourth out of nine entries.

My modifications improved the acceleration times and top speed by roughly 40 percent, but they shortened the run time to 8 minutes. In the scale ¼-mile (132 feet), the times averaged in the 4.5-second range, compared with about 7.5 seconds in the Shootout. Calculated top speed was over 20mph, compared with less than 13mph for the stock version.

Super-long wheelies are now just a trigger squeeze away; just go easy on the juice, as the truck will literally try to launch itself straight into the air if you give it too much throttle! With this much spunk, handling is tricky and takes some getting used to. Sharply cutting the front wheels when traveling too fast is a sure recipe for flipping it several times.

As Steve points out, R/C monster trucks are built tough, but they aren't meant to contend for the Off-Road World Championship. For all-around fun, though, they're hard to beat. With these mods, there's one

(Continued on page 138)

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PONY EXPRESS

(Continued from page 136)

thing you can definitely count on—this Pony Express will *really* haul the mail!

**Here are the addresses of the manufacturers mentioned in this article:*

MRC/Tamiya, 200 Carter Dr., P.O. Box 267, Edison NJ 08818.

Pacer Technology, 1600 Dell Ave., Campbell, CA 95008.

Hobbico, P.O. Box 778, Champaign, IL 61820.

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.

Rocket City Specialties, 403 Wholesale Ave. N.E., Huntsville, AL 35811.

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Twister Motors, 657 E. Arrow Hwy., Suite H, Glendora, CA 91740.

Miracle Speedway Racing Products, 300 Pheasant Dr., Kalispell, MT 59901.

Kimbrough Products, 1430 East St. Andrews Place, Unit F, Santa Ana, CA 92705.

Futaba Industries, 555 W. Victoria St., Compton, CA 90220.

KO Propo; distributed by Global Hobby & Supply, 10725 Ellis Ave., Fountain Valley, CA 92728.

Airtronics, Inc., 11 Autry, Irvine, CA 92718.

BoLINK R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245.

Pactra, 410 N. Michigan Ave., Room 1280,

(Continued on page 142)

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10 A.M. to 6 P.M.

ADVANCED TICKET SALES
Save time, order your tickets now — send check or money order made payable to WRAM, Inc. (allow 3 weeks for check clearance) and self-addressed stamped envelope to: Ed Alekslis, 21 Pamela Rd., Peekskill, NY 10566.
One day Ticket, $5.00
under 12 yrs. $1.00/day

STATIC COMPETITION
All models must be operable & RC controlled.
Trophies and/or prizes to be awarded in three categories. Best-In-Show cars and Best-In-Show boats. Top 1st place in each category of the line RC systems for Trophies for all other winners.

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- Post WW I (Military)
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- Stand-Off Scale
- Giant Scale
- Pattern
- Old Timers
- Sport (Non-Scale)
- Gliders
- Helicopters

BOATS
- Scale (Military)
- Scale (Non-Military)
- Racing (Deep-V)
- Racing (Hydro)

CARS
- 1/12 Scale
- 1/10 Scale
- 1/8 Scale or larger

JUNIORS
- All categories

BEST OF SHOW
- Planes
- Boats
- Cars

Entries may be limited due to space availability

To obtain pre-registration Static Competition forms, write (include self-addressed stamped envelope) Allen Reinhardt, 2 Douglas Dr., Pleasantville, NY 10570. Judging takes place Sunday afternoon. Entries accepted until 12 noon Sunday, Special admission area will be provided on both days for static display Contestants with built-up models will start at 8:30 each morning.

SWAP SHOP
The WRAM's Swap Shop has become one of the major show attractions with thousands of individual items changing hands. To help eliminate registration crush, the Swap Shop will provide for preregistration forms. To receive these forms send a self-addressed stamped envelope to: John Isbister, 4 Devon Rd., Larchmont, N.Y. 10538.

SPECIAL NOTE
This year there will be no restrictions in the number of built-up models a registrant may place in the Swap Shop. For further information, write (enclose self-addressed, stamped envelope) or Call: John Sbare, PO Box 26, Mahopac Falls, NY 10542 / 914-628-5988.

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PONY EXPRESS

(Continued from page 138)

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TRACK DIRECTORY

In keeping with our constant efforts to help foster the growth of the radio-control car hobby, we've decided to run this track directory intermittently to inform modelers where they can race and exchange ideas. If you'd like your track listed, send us your name, address, phone number and some information about the track to **R/C Car Action Track Directory**, 251 Danbury Road, Wilton, CT 06897. We'll list as many clubs as space allows.

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R/C PERFORMANCE CENTER
Rt. 27, Hanson, 02341
John Webber (617) 294-8980

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1-Bert Drive, Unit #5, W. Bridgewater
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(Continued on page 146)

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(Continued from page 142)

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NEBRASKA

(Continued on page 151)

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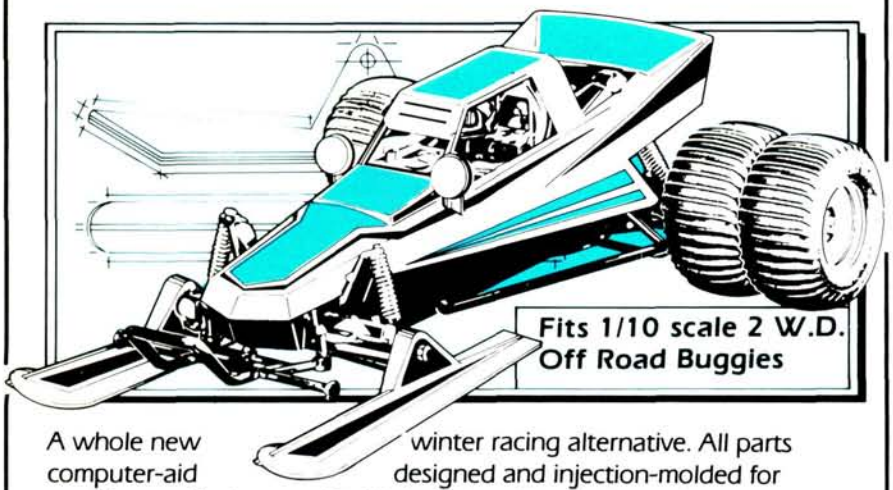

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(Continued on page 152)

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TRACK DIRECTORY

(Continued from page 151)

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(Continued on page 154)

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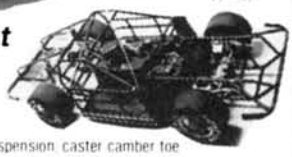

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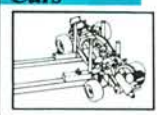

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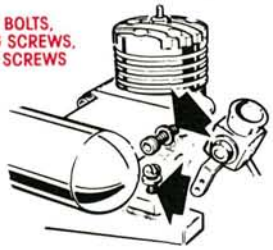

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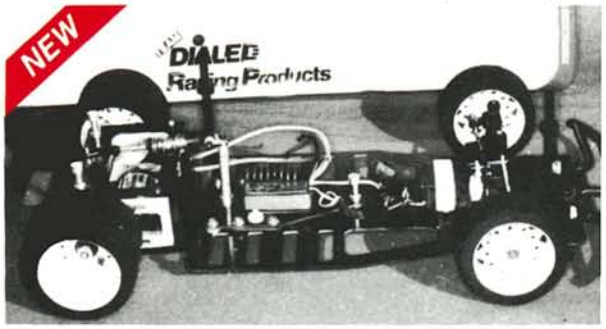

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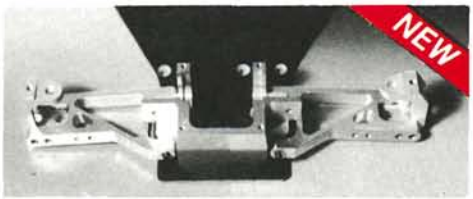

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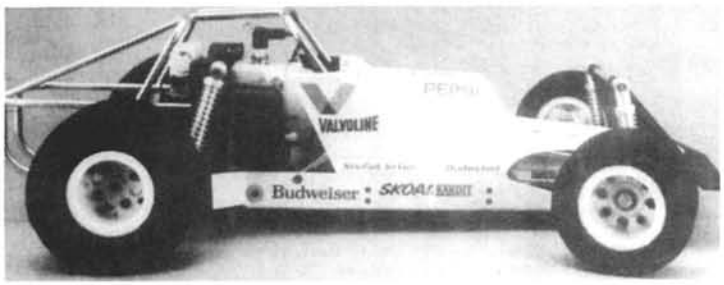

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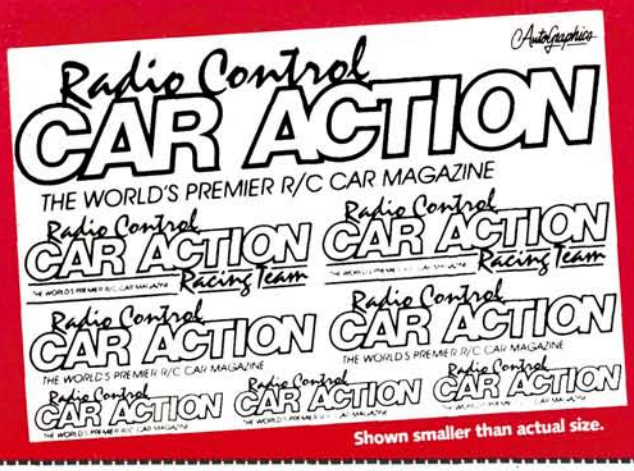

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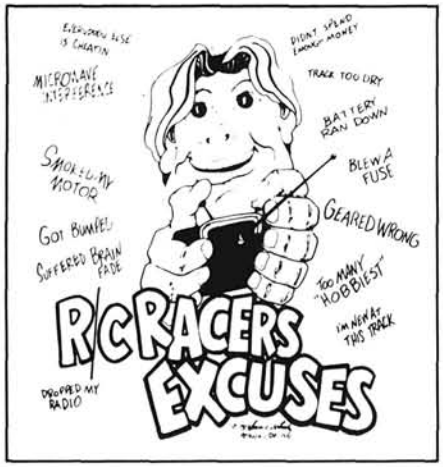

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